The Honorable James L. Robart

UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF WASHINGTON
AT SEATTLE

MICROSOFT CORPORATION, a Washington corporation, Plaintiff, v. MOTOROLA, INC., and MOTOROLA MOBILITY, INC., and GENERAL INSTRUMENT CORPORATION, Defendants.	CASE NO. C10-1823-JLR THE PARTIES' JOINT CLAIM CONSTRUCTION CHART
MOTOROLA MOBILITY, INC., and GENERAL INSTRUMENT CORPORATION, Plaintiffs/Counterclaim Defendant, v. MICROSOFT CORPORATION, Defendant/Counterclaim Plaintiff.	

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DATED this 27th day of January, 2012.

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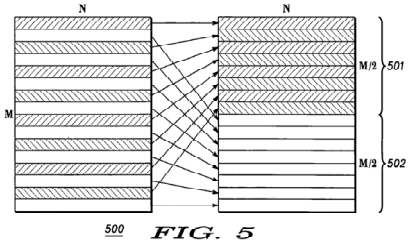
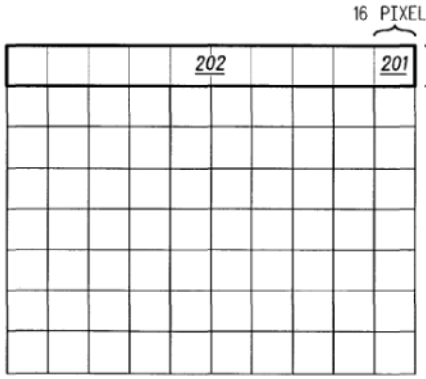
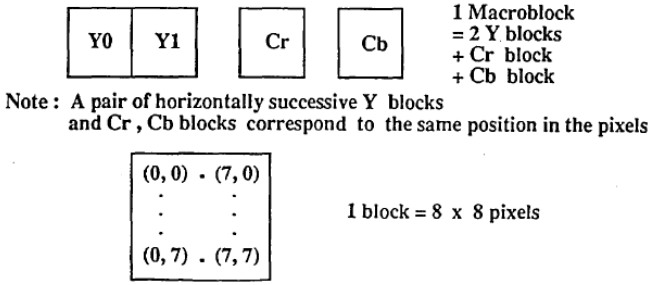
Joint Claim Construction Chart for U.S. Patent Nos. 7,310,374, 7,310,375, and 7,310,376

1. Macroblock Found in claim numbers: '374 Patent: 8, 14; '375 Patent: 6, 13, 17; '376 Patent: 14, 15, 18-20, 22, 23, 26-28, 30	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
Proposed Construction: a picture portion comprising a 16×16 pixel region of luma and corresponding chroma samples Intrinsic Evidence: Exhibit A at col 18:49-50 ("wherein each of said smaller portions has a size that is larger than one macroblock"); '374 Patent Abstract ("Each of the pictures comprises macroblocks that can be further divided into smaller blocks."); Exhibit A at col 1:17-20 ("the present invention relates to frame mode and field mode encoding of digital video content at a macroblock level as used in the MPEG-4 Part 10 AVC/H.264 standard video coding standard."); Exhibit A at col 2:56-60 ("Each of the pictures comprises macroblocks that can be further divided into smaller blocks. The method entails encoding and decoding each of the macroblocks in each picture in said stream of pictures in either frame mode or in field mode."); Exhibit A at col 5:54-58 ("FIG. 2 shows that each picture (200) is preferably divided into slices (202). A slice (202) comprises a group of macroblocks (201). A macroblock (201) is a rectangular group of pixels. As shown in FIG. 2, a preferable macroblock (201) size is 16 by 16 pixels.");	Proposed Construction: a rectangular group of pixels Intrinsic Evidence: '374 Patent, at Fig. 5  FIG. 5 '374 Patent, at 5:56-58 ("A macroblock (201) is a rectangular group of pixels. As show in in FIG. 2, a preferable macroblock (201) size is 16 by 16 pixels."); 7:7-10 ("In FIG. 5, the macroblock has M rows of pixels and N columns of pixels. A preferable value of N and M is 16, making the macroblock (500) a 16 x 16 pixel macroblock."). '374 Patent, at 4:48-51 ("Although this method of AFF encoding is compatible with and will be explained using the MPEG-4 Part 10 AVC/H.264 standard guidelines, it can be modified and used as best serves a particular standard or application."

1. Macroblock Found in claim numbers: '374 Patent: 8, 14; '375 Patent: 6, 13, 17; '376 Patent: 14, 15, 18-20, 22, 23, 26-28, 30	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
 *FIG. 2* Exhibit A at col 5:59-67 ("FIGS. 3a–f shows that a macroblock can be further divided into smaller sized blocks. For example, as shown in FIGS. 3a–f, a macroblock can further be divided into block sizes of 16 by 8 pixels (FIG. 3a; 300), 8 by 16 pixels (FIG. 3b; 301), 8 by 8 pixels (FIG. 3c; 302), 8 by 4 pixels (FIG. 3d; 303), 4 by 8 pixels (FIG. 3e; 304), or 4 by 4 pixels (FIG. 3f: 305). These smaller block sizes are preferable in some applications that use the temporal prediction with motion compensation algorithm."); Exhibit A at col 7:15-24 ("As shown in FIGS. 6a-d, a macroblock that is encoded in field mode can be divided into four additional blocks. A block is required to have a single parity. The single parity requirement is that a block cannot comprise both top and bottom fields. Rather, it must contain a single parity of field. Thus, as shown in FIGS. 6a-d, a field mode macroblock can be divided into blocks of 16 by 8 pixels (FIG. 6a; 600), 8 by 8 pixels	Extrinsic Evidence: ISO-IEC/JTCl/SC29/WGll MPEG 91/228, November 1991 [MS-MOTO_1823_00000720812], at 4 ("A block contains 8 x 8 pixels …. A Macroblock consists of four blocks, i.e. two Y blocks together with corresponding Cr block and Cb block.").  *Id.* ISO/IEC JTC1/SC2/WG11 MPEG 91/221 [MS-MOTO_1823_00000720713], at 3-4 ("A block consists of an array of 8 pixels x 8 lines of either luminance or one of the color difference signals…. A macroblock consists of 2 horizontally adjacent luminance blocks (16 pixels x 8 lines) and the co-sited single 8x8 Cb block and single 8x8 Cr block.").

1. Macroblock Found in claim numbers: '374 Patent: 8, 14; '375 Patent: 6, 13, 17; '376 Patent: 14, 15, 18-20, 22, 23, 26-28, 30	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
(FIG. 6b; 601), 4 by 8 pixels (FIG. 6c; 602), and 4 by 4 pixels (FIG. 6d; 603). FIGS. 6a-d shows that each block contains fields of a single parity."); Exhibit A at col 7:58-60 ("In FIG. 8, each macroblock in the pair of macroblocks (700) has N=16 columns of pixels and M=16 rows of pixels."); Exhibit A at col 4:38-39 (incorporating by reference Exhibit N at MS-MOTO_1823_00001461773) ("3.46 macroblock: The 16x16 luma samples and the two corresponding blocks of chroma samples.") Exhibit K at MOTM_WASH1823_0336282 ("Each macroblock is 16 x 16 pixels."); Exhibit L at MOTM_WASH1823_0336317 ("[a] MB of 16 x 16"); Exhibit M at MOTM_WASH1823_0336328 ("[a] MB of 16 x 16"); Exhibit O at col. 3:12-21 ("The frame is divided into N slices in the vertical direction and each slice is divided into M macro blocks in the horizontal direction, each macro block consisting of a 16x16 array of picture elements. For each macro block there are formed four 8x8 blocks Y[1] to Y[4] of brightness data, which together represent all of the 16x16 picture elements in the macro block. At the same time, two 8x8 data blocks Cb[5] and Cr[6] representing color difference signals are included in each macro block."). Extrinsic Evidence: Exhibit X at MOTM_WASH1823_0055404 ("macroblock: A 16x16 block of luma samples and two corresponding blocks of chroma samples of a picture that has three sample arrays, or a 16x16 block of samples of a monochrome picture or a picture that is coded using three separate colour planes. The division of a slice	U.S. Patent No. 5,878,166 (filed Dec 26, 1995, issued Mar 2, 1999) [MS-MOTO_1823_00000718345], at 10:12-15 ("This results in a macroblock which comprises 4x4 pixels, so that there is a 4x2 macroblock in Field F_1 and 4x2 [sic] macroblock in field F_2."); 10:37-38 ("This results in a 8x8 macroblock comprising an 8x4 macroblock in Field F_1 and an 8x4 macroblock in Field F_2.").

1. Macroblock Found in claim numbers: '374 Patent: 8, 14; '375 Patent: 6, 13, 17; '376 Patent: 14, 15, 18-20, 22, 23, 26-28, 30	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
or a macroblock pair into macroblocks is a partitioning."); Exhibit Y at MOTM_WASH1823_0336711 ("A picture is partitioned into fixed-size macroblocks that each cover a rectangular picture area of 16×16 samples of the luma component and 8×8 samples of each of the two chroma components. This partitioning into macroblocks has been adopted into all previous ITU-T and ISO/IEC JTC1 video coding standards since H.261."); Exhibit Z at MOTM_WASH1823_0336350 (under "Standard Hybrid Video Codec Terminology," defining "macroblock" as "a region of size 16 x 16 in luminance picture and the corresponding region of chrominance information…"); Exhibit AA at MOTM_WASH1823_0336338 ("In many video standards, motion compensation is applied to 16×16 macroblocks, while the residual error is DCT coded with 8×8 blocks.").	

<table>
<tr><th colspan="2">2. using said plurality of decoded [smaller portions/ processing blocks] to construct a decoded picture
Found in claim numbers: ’374 Patent: 8, 14; ’375 Patent: 6, 13, 17; ’376 Patent: 14, 22, 30</th></tr>
<tr><th>Motorola’s Proposed Construction and Evidence in Support</th><th>Microsoft’s Proposed Construction and Evidence in Support</th></tr>
<tr>
<td>Proposed Construction:

No construction necessary.

If construed: generating a decoded picture from the plurality of decoded [smaller portions/processing blocks]

Intrinsic Evidence:

Exhibit A at col 18:44-54 (“A method of decoding an encoded picture having a plurality of smaller portions from a bitstream, comprising: decoding at least one of said plurality of smaller portions at a time in frame coding mode and at least one of said plurality of smaller portions at a time in field coding mode, wherein each of said smaller portions has a size that is larger than one macroblock, wherein at least one block within said at least one of said plurality of smaller portions at a time is encoded in inter coding mode; and using said plurality of decoded smaller portions to construct a decoded picture.”); Exhibit A at col 1:59-67 (“The general idea behind video coding is to remove data from the digital video content that is “non-essential.” The decreased amount of data then requires less bandwidth for broadcast or transmission. After the compressed video data has been transmitted, it must be decoded, or decompressed. In this process, the transmitted video data is processed to generate approximation data that is substituted into the video data to replace the “non-essential” data that was removed in the coding process.”); Exhibit A at col 6:1-37 (“FIG. 4 shows a picture construction example using temporal prediction</td>
<td>Proposed Construction:

assembling the decoded [smaller portions/processing blocks] to form a decoded “picture”

Intrinsic Evidence:

’374 Patent, at Figs. 5

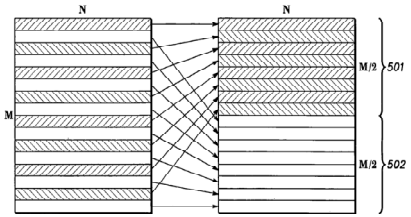
 

FIG. 5

’374 Patent, at Figs. 7

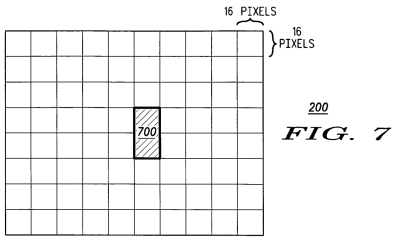
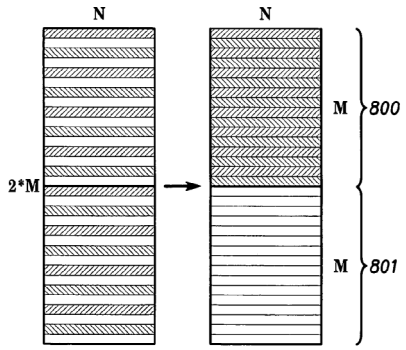
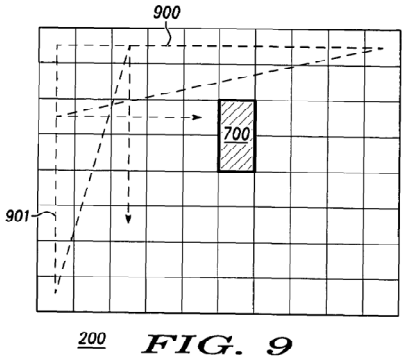
 

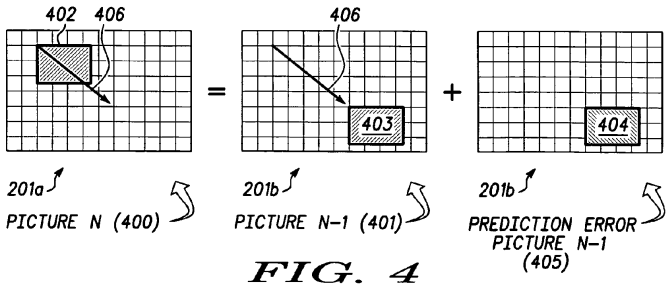
FIG. 7

’374 Patent, at Figs. 8</td>
</tr>
</table>

2. using said plurality of decoded [smaller portions/ processing blocks] to construct a decoded picture

Found in claim numbers: '374 Patent: 8, 14; '375 Patent: 6, 13, 17; '376 Patent: 14, 22, 30

Motorola's Proposed Construction and Evidence in Support	Microsoft's Proposed Construction and Evidence in Support
with motion compensation that illustrates an embodiment of the present invention. Temporal prediction with motion compensation assumes that a current picture, picture N (400), can be locally modeled as a translation of another picture, picture N-1 (401). The picture N-1 (401) is the reference picture for the encoding of picture N (400) and can be in the forward or backwards temporal direction in relation to picture N (400). As shown in FIG. 4, each picture is preferably divided into slices containing macroblocks (201a,b). The picture N-1 (401) contains an image (403) that is to be shown in picture N (400). The image (403) will be in a different temporal position in picture N (402) than it is in picture N-1 (401), as shown in FIG. 4. The image content of each macroblock (201b) of picture N (400) is predicted from the image content of each corresponding macroblock (201a) of picture N-1 (401) by estimating the required amount of temporal motion of the image content of each macroblock (201a) of picture N-1 (401) for the image (403) to move to its new temporal position (402) in picture N (400). Instead of the original image (402) being encoded, the difference (404) between the image (402) and its prediction (403) is actually encoded and transmitted. For each image (402) in picture N (400), the temporal prediction can often be described by motion vectors that represent the amount of temporal motion required for the image (403) to move to a new temporal position in the picture N (402). The motion vectors (406) used for the temporal prediction with motion compensation need to	 '374 Patent, at Figs. 9  FIG. 9 '374 Patent, at 3:32-33 ("FIG. 5 shows that a macroblock is split into a top field and a bottom field if it is to be encoded in field mode.") '374 Patent, at 3:46-54 ("

2. using said plurality of decoded [smaller portions/ processing blocks] to construct a decoded picture Found in claim numbers: '374 Patent: 8, 14; '375 Patent: 6, 13, 17; '376 Patent: 14, 22, 30	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
be encoded and transmitted. FIG. 4 shows that the image (402) in picture N (400) can be represented by the difference (404) between the image and its prediction and the associated motion vectors (406). The exact method of encoding using the motion vectors can vary as best serves a particular application and can be easily implemented by someone who is skilled in the art.");  FIG. 4 Exhibit A at col 12:57-60 ("According to another embodiment of the present invention, a macroblock in a P picture can be skipped in AFF coding. If a macroblock is skipped, its data is not transmitted in the encoding of the picture. A skipped macroblock in a P picture is reconstructed by copying the co-located macroblock in the most recently coded reference picture."). Exhibit C at col 19:17-31 ("A method of decoding an encoded	FIG. 7 illustrates an exemplary pair of macroblocks that can be used in AFF coding on a pair of macroblocks according to an embodiment of the present invention.") '374 Patent, at 7:43 – 8:45 ("FIG. 7 illustrates an exemplary pair of macroblocks (700) that can be used in AFF coding on a pair of macroblocks according to an embodiment of the present invention. If the pair of macroblocks (700) is to be encoded in frame mode, the pair is coded as two frame-based macroblocks. In each macroblock, the two fields in each of the macroblocks are encoded jointly. Once encoded as frames, the macroblocks can be further divided into the smaller blocks of FIGS. 3a-f for use in the temporal prediction with motion compensation algorithm. However, if the pair of macroblocks (700) is to be encoded in field mode, it is first split into one top field 16 by 16 pixel block (800) and one bottom field 16 by 16 pixel block (801), as shown in FIG. 8. The two fields are then coded separately. In FIG. 8, each macroblock in the pair of macroblocks (700) has N=16 columns of pixels and M=16 rows of pixels. Thus, the dimensions of the pair of macroblocks (700) is 16 by 32 pixels. As shown in FIG. 8, every other row of pixels is shaded. The shaded areas represent the rows of pixels in the top field of the macroblocks and the unshaded areas represent the rows of pixels in the bottom field of the macroblocks. The top field block (800) and the bottom field block (801) can now be divided into one of the possible block sizes of

2. using said plurality of decoded [smaller portions/ processing blocks] to construct a decoded picture Found in claim numbers: '374 Patent: 8, 14; '375 Patent: 6, 13, 17; '376 Patent: 14, 22, 30	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
picture having a plurality of processing blocks, each processing block containing macroblocks, each macroblock containing a plurality of blocks, from a bitstream, comprising: decoding at least one of a plurality of processing blocks at a time, wherein each of said plurality of processing blocks includes a pair of macroblocks or a group of macroblocks, in frame coding mode and at least one of said plurality of processing blocks at a time in field coding mode, wherein said decoding is applied to a pair of blocks, or a group of blocks, wherein said decoding is performed in a horizontal scanning path or a vertical scanning path; and using said plurality of decoded processing blocks to construct a decoded picture."); Exhibit C at col 1:59-67 ("The general idea behind video coding is to remove data from the digital video content that is "non-essential." The decreased amount of data then requires less bandwidth for broadcast or transmission. After the compressed video data has been transmitted, it must be decoded, or decompressed. In this process, the transmitted video data is processed to generate approximation data that is substituted into the video data to replace the "non-essential" data that was removed in the coding process."); Exhibit C at col 6:4-40 ("FIG. 4 shows a picture construction example using temporal prediction with motion compensation that illustrates an embodiment of the present invention. Temporal prediction with motion compensation assumes that a current picture, picture N (400), can be locally modeled as a translation of another picture, picture N-1 (401). The picture N-1 (401) is the reference picture for the encoding of picture N (400) and can be in the forward or backwards temporal	FIGS. 3a-f. According to an embodiment of the present invention, in the AFF coding of pairs of macroblocks (700), there are two possible scanning paths. A scanning path determines the order in which the pairs of macroblocks of a picture are encoded. FIG. 9 shows the two possible scanning paths in AFF coding of pairs of macroblocks (700). One of the scanning paths is a horizontal scanning path (900). In the horizontal scanning path (900), the macroblock pairs (700) of a picture (200) are coded from left to right and from top to bottom, as shown in FIG. 9. The other scanning path is a vertical scanning path (901). In the vertical scanning path (901), the macroblock pairs (700) of a picture (200) are coded from top to bottom and from left to right, as shown in FIG. 9. For frame mode coding, the top macroblock of a macroblock pair (700) is coded first, followed by the bottom macroblock. For field mode coding, the top field macroblock of a macroblock pair is coded first followed by the bottom field macroblock. Another embodiment of the present invention extends the concept of AFF coding on a pair of macroblocks to AFF coding on a group of four or more neighboring macroblocks (902), as shown in FIG. 10. AFF coding on a group of macroblocks will be occasionally referred to as group based AFF coding. The same scanning paths, horizontal (900) and vertical (901), as are used in the scanning of

2. using said plurality of decoded [smaller portions/ processing blocks] to construct a decoded picture Found in claim numbers: '374 Patent: 8, 14; '375 Patent: 6, 13, 17; '376 Patent: 14, 22, 30	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
direction in relation to picture N (400). As shown in FIG. 4, each picture is preferably divided into slices containing macroblocks (201a,b). The picture N-1 (401) contains an image (403) that is to be shown in picture N (400). The image (403) will be in a different temporal position in picture N (402) than it is in picture N-1 (401), as shown in FIG. 4. The image content of each macroblock (201b) of picture N (400) is predicted from the image content of each corresponding macroblock (201a) of picture N-1 (401) by estimating the required amount of temporal motion of the image content of each macroblock (201a) of picture N-1 (401) for the image (403) to move to its new temporal position (402) in picture N (400). Instead of the original image (402) being encoded, the difference (404) between the image (402) and its prediction (403) is actually encoded and transmitted. For each image (402) in picture N (400), the temporal prediction can often be described by motion vectors that represent the amount of temporal motion required for the image (403) to move to a new temporal position in the picture N (402). The motion vectors (406) used for the temporal prediction with motion compensation need to be encoded and transmitted. FIG. 4 shows that the image (402) in picture N (400) can be represented by the difference (404) between the image and its prediction and the associated motion vectors (406). The exact method of encoding using the motion vectors can vary as best	macroblock pairs are used in the scanning of groups of neighboring macroblocks (902). Although the example shown in FIG. 10 shows a group of four macroblocks, the group can be more than four macroblocks. If the group of macroblocks (902) is to be encoded in frame mode, the group coded as four frame-based macroblocks. In each macroblock, the two fields in each of the macroblocks are encoded jointly. Once encoded as frames, the macroblocks can be further divided into the smaller blocks of FIGS. 3a-f for use in the temporal prediction with motion compensation algorithm. However, if a group of four macroblocks (902), for example, is to be encoded in field mode, it is first split into one top field 32 by 16 pixel block and one bottom field 32 by 16 pixel block. The two fields are then coded separately. The top field block and the bottom field block can now be divided into macroblocks. Each macroblock is further divided into one of the possible block sizes of FIGS. 3a-f. Because this process is similar to that of FIG. 8, a separate figure is not provided to illustrate this embodiment.") '374 Patent File History, Examiner's Amendment, June 23, 2007, at 2-4 (e.g., "decoding at least one of said plurality of smaller portions at a time in frame coding mode and at least one of said plurality of smaller portions at a time in field coding mode, wherein each of said smaller portions has a size that is larger than

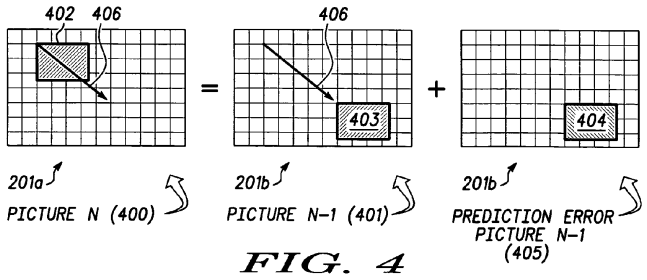
<table>
<tr><th colspan="2">2. using said plurality of decoded [smaller portions/ processing blocks] to construct a decoded picture
Found in claim numbers: ’374 Patent: 8, 14; ’375 Patent: 6, 13, 17; ’376 Patent: 14, 22, 30</th></tr>
<tr><th>Motorola’s Proposed Construction and Evidence in Support</th><th>Microsoft’s Proposed Construction and Evidence in Support</th></tr>
<tr><td>serves a particular application and can be easily implemented by someone who is skilled in the art.”);
 

FIG. 4

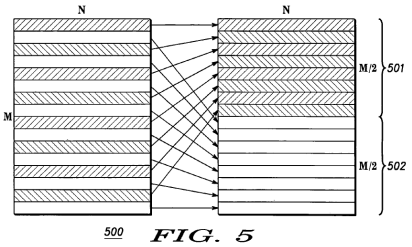
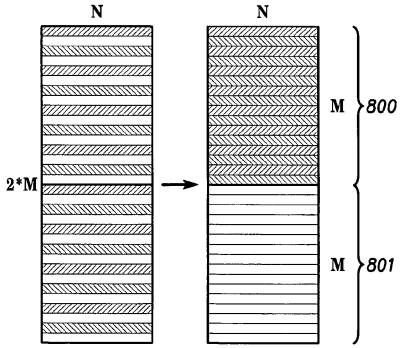
Exhibit C at col 12:60-65 (“According to another embodiment of the present invention, a macroblock in a P picture can be skipped in AFF coding. If a macroblock is skipped, its data is not transmitted in the encoding of the picture. A skipped macroblock in a P picture is reconstructed by copying the co-located macroblock in the most recently coded reference picture.”).</td><td>one macroblock, wherein at least one block within said at least one of said plurality of smaller portions <u>at a time</u> is encoded in inter coding mode ….”).

‘374 Patent File History, Reasons for Allowance, June 23, 2007, at 5-6 (“Claims … are allowed as having incorporated novel features comprising … decoding at least one of said plurality of smaller portions <u>at a time</u> of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions <u>at a time</u> of the encoded picture in field coding mode, wherein each of said smaller potions has a size that is larger than one macroblock, where at least one block within at least one of said plurality of smaller portions at a time is encoded in inter coding mode …. The prior art of record fails to anticipate or make obvious the novel features (<u>emphasis added on underlined claims(s) limitations</u>) as specified above.”).

<u>Extrinsic Evidence</u>:

The American Heritage Dictionary (2nd College Ed.) at 315 [MS-MOTO_1823_00005194890] (“construct … 1. To form by assembling parts; build.”).</td></tr>
</table>

3. means for decoding at least one of a plurality of processing blocks at a time, each processing block containing a pair of macroblocks or a group of macroblocks, each macroblock containing a plurality of blocks, from said encoded picture that is encoded in frame coding mode and at least one of said plurality of processing blocks at a time that is encoded in field coding mode Found in claim number: '376 Patent: 22	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
Proposed Construction: This is a means-plus function limitation that must be construed according to 35 U.S.C. §112,¶6 *Function*: decoding at least one of a plurality of processing blocks at a time, each processing block containing a pair of macroblocks or a group of macroblocks, each macroblock containing a plurality of blocks, from said encoded picture that is encoded in frame coding mode and at least one of said plurality of processing blocks at a time that is encoded in field coding mode, wherein said decoding is performed in a horizontal scanning path or a vertical scanning path. *Structure*: Decoder, and equivalents thereof Intrinsic Evidence: Exhibit C at col 4:58-5:3 ("the decoder decodes the pictures. The… decoder can be a processor, application specific integrated circuit (ASIC), field programmable gate array (FPGA), coder/decoder (CODEC), digital signal processor (DSP), or some other electronic device that is capable of encoding the stream of pictures…. The term "decoder" will be used to refer expansively to	Proposed Construction: Function: removing the frame coding mode from more than one macroblock together and removing the field coding mode from more than one macroblock together to obtain at least one of a plurality of decoded processing blocks Structure: a processor, application specific integrated circuit (ASIC), field programmable gate array (FPGA), coder/decoder (CODEC), or digital signal processor (DSP) performing the algorithm of: in field mode, creating in memory one or more macroblocks each containing one field and one or more macroblocks each containing the other field and processing each such macroblock together with the other macroblocks to create in memory at least two macroblocks containing lines from both fields and in frame mode, creating in memory one or more macroblocks each containing lines from both fields and processing each such macroblock together to create in memory at least two macroblocks containing lines from both fields Intrinsic Evidence: '374 Patent, at Figs. 5

3. means for decoding at least one of a plurality of processing blocks at a time, each processing block containing a pair of macroblocks or a group of macroblocks, each macroblock containing a plurality of blocks, from said encoded picture that is encoded in frame coding mode and at least one of said plurality of processing blocks at a time that is encoded in field coding mode Found in claim number: '376 Patent: 22	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
all electronic devices that decode digital video content comprising a stream of pictures.").	 500 FIG. 5 '374 Patent, at Figs. 8  '374 Patent, at 3:32-33 ("FIG. 5 shows that a macroblock is split into a top field and a bottom field if it is to be encoded in field mode.")

3. means for decoding at least one of a plurality of processing blocks at a time, each processing block containing a pair of macroblocks or a group of macroblocks, each macroblock containing a plurality of blocks, from said encoded picture that is encoded in frame coding mode and at least one of said plurality of processing blocks at a time that is encoded in field coding mode Found in claim number: '376 Patent: 22	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	'374 Patent, at 3:50-52 ("FIG. 8 shows that a pair of macroblocks that is to be encoded in field mode is first split into one top field 16 by 16 pixel block and one bottom field 16 by 16 pixel block.") '374 Patent, at 4:17-34 (" The present invention provides a method of adaptive frame/field (AFF) coding of digital video content comprising a stream of pictures or slices of a picture at a macroblock level. The present invention extends the concept of picture level AFF to macroblocks. In AFF coding at a picture level, each picture in a stream of pictures that is to be encoded is encoded in either frame mode or in field mode, regardless of the frame or field coding mode of other pictures that are to be coded. If a picture is encoded in frame mode, the two fields that make up an interlaced frame are coded jointly. Conversely, if a picture is encoded in field mode, the two fields that make up an interlaced frame are coded separately. The encoder determines which type of coding, frame mode coding or field mode coding, is more advantageous for each picture and chooses that type of encoding for the picture. The exact method of choosing between frame mode and field mode is not critical to the present invention and will not be detailed herein.")

3. means for decoding at least one of a plurality of processing blocks at a time, each processing block containing a pair of macroblocks or a group of macroblocks, each macroblock containing a plurality of blocks, from said encoded picture that is encoded in frame coding mode and at least one of said plurality of processing blocks at a time that is encoded in field coding mode Found in claim number: '376 Patent: 22	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	'374 Patent, at 6:50-57 ("Picture level AFF is preferable to fixed frame/field coding in many applications because it allows the encoder to chose which mode, frame mode or field mode, to encode each picture in the stream of pictures based on the contents of the digital video material. AFF coding results in better compression than does fixed frame/field coding in many applications. An embodiment of the present invention is that AFF coding can be performed on smaller portions of a picture.") '374 Patent, at 6:58-64 ("An embodiment of the present invention is that AFF coding can be performed on smaller portions of a picture. This small portion can be a macroblock, a pair of macroblocks, or a group of macroblocks. Each macroblock, pair of macroblocks, or group of macroblocks or slice is encoded in frame mode or in field mode, regardless of how the other macroblocks in the picture are encoded. AFF coding in each of the three cases will be described in detail below.") '374 Patent, at 7:26 – 8:65 ("AFF coding on macroblock pairs will

3. means for decoding at least one of a plurality of processing blocks at a time, each processing block containing a pair of macroblocks or a group of macroblocks, each macroblock containing a plurality of blocks, from said encoded picture that is encoded in frame coding mode and at least one of said plurality of processing blocks at a time that is encoded in field coding mode Found in claim number: '376 Patent: 22	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	now be explained. AFF coding on macroblock pairs will be occasionally referred to as pair based AFF coding. A comparison of the block sizes in FIGS. 6a-d and in FIGS. 3a-f show that a macroblock encoded in field mode can be divided into fewer block patterns than can a macroblock encoded in frame mode. The block sizes of 16 by 16 pixels, 8 by 16 pixels, and 8 by 4 pixels are not available for a macroblock encoded in field mode because of the single parity requirement. This implies that the performance of single macroblock based AFF may not be good for some sequences or applications that strongly favor field mode coding. In order to guarantee the performance of field mode macroblock coding, it is preferable in some applications for macroblocks that are coded in field mode to have the same block sizes as macroblocks that are coded in frame mode. This can be achieved by performing AFF coding on macroblock pairs instead of on single macroblocks. FIG. 7 illustrates an exemplary pair of macroblocks (700) that can be used in AFF coding on a pair of macroblocks according to an embodiment of the present invention. If the pair of macroblocks (700) is to be encoded in frame mode, the pair is coded as two frame-based macroblocks. In each macroblock, the two fields in each of the macroblocks are encoded jointly. Once encoded as frames, the macroblocks can be further divided into the smaller

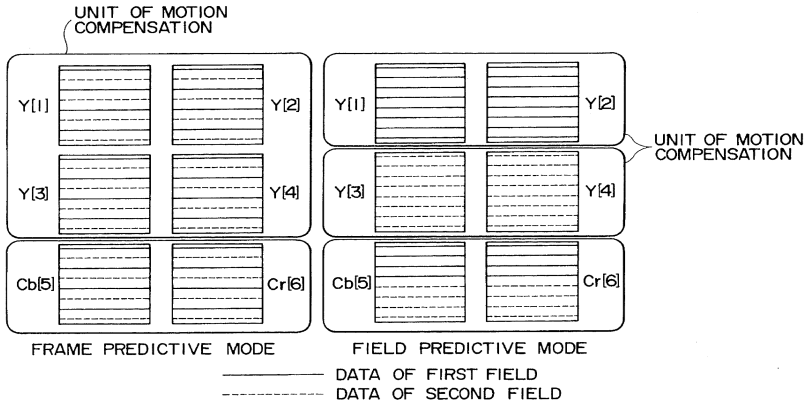
3. means for decoding at least one of a plurality of processing blocks at a time, each processing block containing a pair of macroblocks or a group of macroblocks, each macroblock containing a plurality of blocks, from said encoded picture that is encoded in frame coding mode and at least one of said plurality of processing blocks at a time that is encoded in field coding mode Found in claim number: '376 Patent: 22	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	blocks of FIGS. 3a-f for use in the temporal prediction with motion compensation algorithm. However, if the pair of macroblocks (700) is to be encoded in field mode, it is first split into one top field 16 by 16 pixel block (800) and one bottom field 16 by 16 pixel block (801), as shown in FIG. 8. The two fields are then coded separately. In FIG. 8, each macroblock in the pair of macroblocks (700) has N=16 columns of pixels and M=16 rows of pixels. Thus, the dimensions of the pair of macroblocks (700) is 16 by 32 pixels. As shown in FIG. 8, every other row of pixels is shaded. The shaded areas represent the rows of pixels in the top field of the macroblocks and the unshaded areas represent the rows of pixels in the bottom field of the macroblocks. The top field block (800) and the bottom field block (801) can now be divided into one of the possible block sizes of FIGS. 3a-f. According to an embodiment of the present invention, in the AFF coding of pairs of macroblocks (700), there are two possible scanning paths. A scanning path determines the order in which the pairs of macroblocks of a picture are encoded. FIG. 9 shows the two possible scanning paths in AFF coding of pairs of macroblocks (700). One of the scanning paths is a horizontal scanning path (900). In the horizontal scanning path (900), the

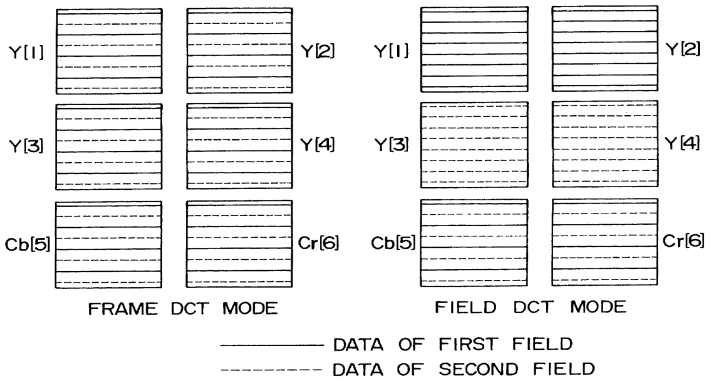
3. means for decoding at least one of a plurality of processing blocks at a time, each processing block containing a pair of macroblocks or a group of macroblocks, each macroblock containing a plurality of blocks, from said encoded picture that is encoded in frame coding mode and at least one of said plurality of processing blocks at a time that is encoded in field coding mode Found in claim number: '376 Patent: 22	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	macroblock pairs (700) of a picture (200) are coded from left to right and from top to bottom, as shown in FIG. 9. The other scanning path is a vertical scanning path (901). In the vertical scanning path (901), the macroblock pairs (700) of a picture (200) are coded from top to bottom and from left to right, as shown in FIG. 9. For frame mode coding, the top macroblock of a macroblock pair (700) is coded first, followed by the bottom macroblock. For field mode coding, the top field macroblock of a macroblock pair is coded first followed by the bottom field macroblock. Another embodiment of the present invention extends the concept of AFF coding on a pair of macroblocks to AFF coding on a group of four or more neighboring macroblocks (902), as shown in FIG. 10. AFF coding on a group of macroblocks will be occasionally referred to as group based AFF coding. The same scanning paths, horizontal (900) and vertical (901), as are used in the scanning of macroblock pairs are used in the scanning of groups of neighboring macroblocks (902). Although the example shown in FIG. 10 shows a group of four macroblocks, the group can be more than four macroblocks. If the group of macroblocks (902) is to be encoded in frame mode, the group coded as four frame-based macroblocks. In each

3. means for decoding at least one of a plurality of processing blocks at a time, each processing block containing a pair of macroblocks or a group of macroblocks, each macroblock containing a plurality of blocks, from said encoded picture that is encoded in frame coding mode and at least one of said plurality of processing blocks at a time that is encoded in field coding mode Found in claim number: '376 Patent: 22	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	macroblock, the two fields in each of the macroblocks are encoded jointly. Once encoded as frames, the macroblocks can be further divided into the smaller blocks of FIGS. 3a-f for use in the temporal prediction with motion compensation algorithm. However, if a group of four macroblocks (902), for example, is to be encoded in field mode, it is first split into one top field 32 by 16 pixel block and one bottom field 32 by 16 pixel block. The two fields are then coded separately. The top field block and the bottom field block can now be divided into macroblocks. Each macroblock is further divided into one of the possible block sizes of FIGS. 3a-f. Because this process is similar to that of FIG. 8, a separate figure is not provided to illustrate this embodiment. In AFF coding at the macroblock level, a frame/field flag bit is preferably included in a picture's bitstream to indicate which mode, frame mode or field mode, is used in the encoding of each macroblock. The bitstream includes information pertinent to each macroblock within a stream, as shown in FIG. 11. For example, the bitstream can include a picture header (110), run information (111), and macroblock type (113) information. The frame/field flag (112) is preferably included before each macroblock in the bitstream if AFF is performed on each individual macroblock. If the AFF is performed on pairs of macroblocks, the frame/field flag

3. means for decoding at least one of a plurality of processing blocks at a time, each processing block containing a pair of macroblocks or a group of macroblocks, each macroblock containing a plurality of blocks, from said encoded picture that is encoded in frame coding mode and at least one of said plurality of processing blocks at a time that is encoded in field coding mode Found in claim number: '376 Patent: 22	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	(112) is preferably included before each pair of macroblock in the bitstream. Finally, if the AFF is performed on a group of macroblocks, the frame/field flag (112) is preferably included before each group of macroblocks in the bitstream. One embodiment is that the frame/field flag (112) bit is a 0 if frame mode is to be used and a 1 if field coding is to be used. Another embodiment is that the frame/field flag (112) bit is a 1 if frame mode is to be used and a 0 if field coding is to be used.") '374 Patent File History, Examiner's Amendment, June 23, 2007, at 2-4 (e.g., "decoding at least one of said plurality of smaller portions at a time in frame coding mode and at least one of said plurality of smaller portions at a time in field coding mode, wherein each of said smaller portions has a size that is larger than one macroblock, wherein at least one block within said at least one of said plurality of smaller portions at a time is encoded in inter coding mode …."). '374 Patent File History, Reasons for Allowance, June 23, 2007, at 5-6 ("Claims … are allowed as having incorporated novel features comprising … decoding at least one of said plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode, wherein each of said smaller potions has a size that is larger than one

3. means for decoding at least one of a plurality of processing blocks at a time, each processing block containing a pair of macroblocks or a group of macroblocks, each macroblock containing a plurality of blocks, from said encoded picture that is encoded in frame coding mode and at least one of said plurality of processing blocks at a time that is encoded in field coding mode Found in claim number: '376 Patent: 22	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	macroblock, where at least one block within at least one of said plurality of smaller portions at a time is encoded in inter coding mode …. The prior art of record fails to anticipate or make obvious the novel features (emphasis added on *underlined claims(s) limitations*) as specified above."). '375 File History, Reasons for Allowance, July 17, 2007, at 4-5. '376 File History, Reasons for Allowance, May 24, 2007, at 2-9. '374 Patent family file history, United States Patent No. 5,504,530 (to Okibane et al.) United States Patent No. 5,504,530 (to Okibane et al.) ('530 patent), Figs. 2(A), 2(B), 3(A), 3(B).

3. means for decoding at least one of a plurality of processing blocks at a time, each processing block containing a pair of macroblocks or a group of macroblocks, each macroblock containing a plurality of blocks, from said encoded picture that is encoded in frame coding mode and at least one of said plurality of processing blocks at a time that is encoded in field coding mode Found in claim number: '376 Patent: 22	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	FIG. 2(A) FIG. 2(B) 

3. means for decoding at least one of a plurality of processing blocks at a time, each processing block containing a pair of macroblocks or a group of macroblocks, each macroblock containing a plurality of blocks, from said encoded picture that is encoded in frame coding mode and at least one of said plurality of processing blocks at a time that is encoded in field coding mode Found in claim number: '376 Patent: 22	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	FIG. 3(A) FIG. 3(B)  '530 patent, at 6:2-9 ("FIGS. 2(A) and 2(B) are diagrammatic illustrations of the operation of a predictive mode change-over circuit that is part of the image signal coding apparatus of FIGS. 1(A)-1(C);") '530 patent, at 7:55-67 ("Image data representing a picture stored in the frame memory 51 is read out for processing in a frame predictive mode or a field predictive mode by a predictive mode change-over circuit 52. Further, under the control of a predictive mode determination circuit 54, calculations with respect to intra-picture prediction, forward prediction, backward prediction or bi-

3. means for decoding at least one of a plurality of processing blocks at a time, each processing block containing a pair of macroblocks or a group of macroblocks, each macroblock containing a plurality of blocks, from said encoded picture that is encoded in frame coding mode and at least one of said plurality of processing blocks at a time that is encoded in field coding mode Found in claim number: '376 Patent: 22	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	directional prediction are performed by a calculation section 53. The determination of which type of processing should be performed is based on a prediction error signal formed as a difference between a reference original picture for the frame being processed and a predictive picture. Accordingly, the motion vector detection circuit 50 generates predictive error signals in the form of sums of absolute values or sums of squares for the purpose of the determination. Operation of predictive mode change-over circuit 52 in a frame predictive mode and a field predictive mode will now be described. When operation is to be in the frame predictive mode, the predictive mode change-over circuit outputs four brightness blocks Y[1] to Y[4] as the same are received from the motion vector detection circuit 50. The blocks output from predictive mode change-over circuit 52 are provided to the calculation section 53. In particular, data representing lines of both odd-numbered and even-numbered fields are presented mixed together in each block of brightness data as shown in FIG. 2(A). In the frame predictive mode, prediction is performed on the basis of four blocks of brightness data (i.e. an entire macro block) with one motion vector being provided for the four blocks of brightness data.

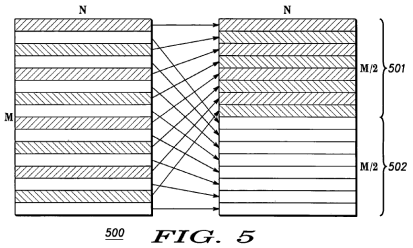
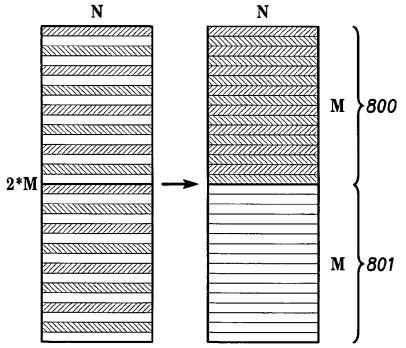
3. means for decoding at least one of a plurality of processing blocks at a time, each processing block containing a pair of macroblocks or a group of macroblocks, each macroblock containing a plurality of blocks, from said encoded picture that is encoded in frame coding mode and at least one of said plurality of processing blocks at a time that is encoded in field coding mode Found in claim number: '376 Patent: 22	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	On the other hand, in the field predictive mode, the predictive mode change-over circuit performs processing upon an input signal which is provided thereto from the motion vector detection circuit 50 so that the signal is arranged in the form shown in FIG. 2(B). Thus, the brightness data blocks Y[1] and Y[2] represent picture elements from the lines for an odd-numbered field, while the other two brightness data blocks Y[3] and Y[4] represent data for lines from even-numbered fields. The resulting data is output from predictive mode change-over circuit 52 to the calculation section 53. In this case, a motion vector for odd-numbered fields corresponds to the two blocks of brightness data Y[1] and Y[2], while a separate motion vector for even-numbered fields corresponds to the other two blocks of brightness data Y[3] and Y[4]. The motion vector detection circuit 50 outputs to the predictive mode change-over circuit 52 respective sums of absolute values of predictive errors for the frame predictive mode and the field predictive mode. The predictive mode change-over circuit 52 compares the two sums of predictive errors, performs processing on the absolute value sum corresponding to the predictive mode in which the absolute value sum has a lower value, and outputs the resulting data to the calculation section 53. However, according to a preferred embodiment of the invention,

3. means for decoding at least one of a plurality of processing blocks at a time, each processing block containing a pair of macroblocks or a group of macroblocks, each macroblock containing a plurality of blocks, from said encoded picture that is encoded in frame coding mode and at least one of said plurality of processing blocks at a time that is encoded in field coding mode Found in claim number: '376 Patent: 22	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	the processing described above is entirely performed within the motion vector detection circuit 50, which outputs a signal in the form corresponding to the appropriate predictive mode to the predictive mode change-over circuit 52, which simply passes that signal on without change to the calculation section 53. Concerning the color difference signal, it should be understood that in the frame predictive mode that signal is supplied to the calculation section 53 in the form of data for mixed lines of odd-numbered fields and even-numbered fields as shown in FIG. 2(A). On the other hand, in the field predictive mode, the first four lines of the color difference blocks Cb[5] and Cr[6] are color difference signals for odd-numbered fields corresponding to the blocks of brightness data Y[1] and Y[2], while the last four lines are color difference signals for even-numbered fields, corresponding to the blocks of brightness data Y[3] and Y[4] as shown in FIG. 2(B). The motion vector detection circuit 50 also produces a sum of absolute values of predictive errors from which it is determined whether the predictive mode determination circuit 54 performs intra-picture processing, forward prediction, backward prediction or bi-directional prediction.") '530 patent, at 9:62-67 ("The DCT mode change-over circuit 55 arranges data contained in the four blocks of brightness data so

3. means for decoding at least one of a plurality of processing blocks at a time, each processing block containing a pair of macroblocks or a group of macroblocks, each macroblock containing a plurality of blocks, from said encoded picture that is encoded in frame coding mode and at least one of said plurality of processing blocks at a time that is encoded in field coding mode Found in claim number: '376 Patent: 22	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	that, for a frame DCT mode, lines of odd-numbered and even-numbered fields are mixed, or, in a field DCT mode, so that the lines for odd-numbered fields and even-numbered fields are separated, as respectively shown in FIGS. 3(A) and 3(B). The DCT mode change-over circuit 55 outputs the resulting data to a DCT circuit 56. More specifically, the DCT mode change-over circuit 55 performs a comparison of the coding efficiency that would be provided depending on whether the data for odd-numbered fields and even-numbered fields are presented mixed together or separately, and based on the comparison selects the mode which will result in higher coding efficiency.") Extrinsic Evidence: Webster's New World Dictionary, (2nd College Ed.) at 1291 [MS-MOTO_1823_00005194926] ("**select** … adj. [L. selectus, pp. of seligere, to choose, pick out < se, apart + legere, to choose: see logic] … to choose or pick out from among others, as for excellence, desirability, etc. –vi. to make a selection; choose – SYN, see choose"). The American Heritage Dictionary of Idioms (1997) [MS-MOTO_1823_00005194906], at 25 ("**at a time** – see at one time,

3. means for decoding at least one of a plurality of processing blocks at a time, each processing block containing a pair of macroblocks or a group of macroblocks, each macroblock containing a plurality of blocks, from said encoded picture that is encoded in frame coding mode and at least one of said plurality of processing blocks at a time that is encoded in field coding mode Found in claim number: '376 Patent: 22	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	def. 1."), 30 (**at one time 1.** Simultaneously, at the same time, as in *All the boys jumped into the pool at one time*. For synonyms, see at once, def. 1; at the same time, def. 1."), 29 ("**at once 1.** At the same time, as in *We can't all fit into the boat at once*. [First half of 1200s] Also see at one time, def. 1."), 33 ("**at the same time 1.** Simultaneously, as in *We were all scheduled to leave at the same time*. This idiom was first recorded in 1526. For synonyms, see at once, def. 1; at one time, def. 1."). The American Heritage Dictionary (2nd College Ed.), at 1271 [MS-MOTO_1823_00005194898] ("**at one time. 1**. Simultaneously.").

4. means for selectively decoding at least one of a plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode Found in claim number: '375 Patent: 13	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
Proposed Construction: This is a means-plus function limitation that must be construed according to 35 U.S.C. §112,¶6 *Function*: selectively decoding at least one of a plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode. *Structure*: Decoder, and equivalents thereof Intrinsic Evidence: Exhibit B at col 4:58-5:3 ("the decoder decodes the pictures. The… decoder can be a processor, application specific integrated circuit (ASIC), field programmable gate array (FPGA), coder/decoder (CODEC), digital signal processor (DSP), or some other electronic device that is capable of encoding the stream of pictures…. The term "decoder" will be used to refer expansively to all electronic devices that decode digital video content comprising a stream of pictures.").	Proposed Construction: Function: choosing to remove the frame coding mode from more than one macroblock together or to remove the field coding mode from more than one macroblock together to obtain at least one of a plurality of "decoded smaller portions" Structure: a processor, application specific integrated circuit (ASIC), field programmable gate array (FPGA), coder/decoder (CODEC), or digital signal processor (DSP) performing the algorithm of: in field mode, creating in memory one or more macroblocks each containing one field and one or more macroblocks each containing the other field and processing each such macroblock together with the other macroblocks to create in memory at least two macroblocks containing lines from both fields and in frame mode, creating in memory one or more macroblocks each containing lines from both fields and processing each such macroblock together to create in memory at least two macroblocks containing lines from both fields Intrinsic Evidence: '374 Patent, at Figs. 5

4. means for selectively decoding at least one of a plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode Found in claim number: '375 Patent: 13	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	 FIG. 5 '374 Patent, at Figs. 8  '374 Patent, at 3:32-33 ("FIG. 5 shows that a macroblock is split into a top field and a bottom field if it is to be encoded in field mode.") '374 Patent, at 3:50-52 ("FIG. 8 shows that a pair of macroblocks

4. means for selectively decoding at least one of a plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode Found in claim number: '375 Patent: 13	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	that is to be encoded in field mode is first split into one top field 16 by 16 pixel block and one bottom field 16 by 16 pixel block.") '374 Patent, at 4:17-34 (" The present invention provides a method of adaptive frame/field (AFF) coding of digital video content comprising a stream of pictures or slices of a picture at a macroblock level. The present invention extends the concept of picture level AFF to macroblocks. In AFF coding at a picture level, each picture in a stream of pictures that is to be encoded is encoded in either frame mode or in field mode, regardless of the frame or field coding mode of other pictures that are to be coded. If a picture is encoded in frame mode, the two fields that make up an interlaced frame are coded jointly. Conversely, if a picture is encoded in field mode, the two fields that make up an interlaced frame are coded separately. The encoder determines which type of coding, frame mode coding or field mode coding, is more advantageous for each picture and chooses that type of encoding for the picture. The exact method of choosing between frame mode and field mode is not critical to the present invention and will not be detailed herein.") '374 Patent, at 6:50-57 ("Picture level AFF is preferable to fixed frame/field coding in many applications because it allows the encoder to chose which mode, frame mode or field mode, to

4. means for selectively decoding at least one of a plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode Found in claim number: '375 Patent: 13	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	encode each picture in the stream of pictures based on the contents of the digital video material. AFF coding results in better compression than does fixed frame/field coding in many applications. An embodiment of the present invention is that AFF coding can be performed on smaller portions of a picture.") '374 Patent, at 6:58-64 ("An embodiment of the present invention is that AFF coding can be performed on smaller portions of a picture. This small portion can be a macroblock, a pair of macroblocks, or a group of macroblocks. Each macroblock, pair of macroblocks, or group of macroblocks or slice is encoded in frame mode or in field mode, regardless of how the other macroblocks in the picture are encoded. AFF coding in each of the three cases will be described in detail below.") '374 Patent, at 7:26 – 8:65 ("AFF coding on macroblock pairs will now be explained. AFF coding on macroblock pairs will be occasionally referred to as pair based AFF coding. A comparison of the block sizes in FIGS. 6a-d and in FIGS. 3a-f show that a macroblock encoded in field mode can be divided into fewer block patterns than can a macroblock encoded in frame mode. The block sizes of 16 by 16 pixels, 8 by 16 pixels, and 8 by 4 pixels are not available for a macroblock encoded in field mode because of the

4. means for selectively decoding at least one of a plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode Found in claim number: '375 Patent: 13	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	single parity requirement. This implies that the performance of single macroblock based AFF may not be good for some sequences or applications that strongly favor field mode coding. In order to guarantee the performance of field mode macroblock coding, it is preferable in some applications for macroblocks that are coded in field mode to have the same block sizes as macroblocks that are coded in frame mode. This can be achieved by performing AFF coding on macroblock pairs instead of on single macroblocks. FIG. 7 illustrates an exemplary pair of macroblocks (700) that can be used in AFF coding on a pair of macroblocks according to an embodiment of the present invention. If the pair of macroblocks (700) is to be encoded in frame mode, the pair is coded as two frame-based macroblocks. In each macroblock, the two fields in each of the macroblocks are encoded jointly. Once encoded as frames, the macroblocks can be further divided into the smaller blocks of FIGS. 3a-f for use in the temporal prediction with motion compensation algorithm. However, if the pair of macroblocks (700) is to be encoded in field mode, it is first split into one top field 16 by 16 pixel block (800) and one bottom field 16 by 16 pixel block (801), as shown in FIG. 8. The two fields are then coded separately. In FIG. 8, each macroblock in the pair of macroblocks (700) has N=16 columns of

4. means for selectively decoding at least one of a plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode Found in claim number: '375 Patent: 13	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	pixels and M=16 rows of pixels. Thus, the dimensions of the pair of macroblocks (700) is 16 by 32 pixels. As shown in FIG. 8, every other row of pixels is shaded. The shaded areas represent the rows of pixels in the top field of the macroblocks and the unshaded areas represent the rows of pixels in the bottom field of the macroblocks. The top field block (800) and the bottom field block (801) can now be divided into one of the possible block sizes of FIGS. 3a-f. According to an embodiment of the present invention, in the AFF coding of pairs of macroblocks (700), there are two possible scanning paths. A scanning path determines the order in which the pairs of macroblocks of a picture are encoded. FIG. 9 shows the two possible scanning paths in AFF coding of pairs of macroblocks (700). One of the scanning paths is a horizontal scanning path (900). In the horizontal scanning path (900), the macroblock pairs (700) of a picture (200) are coded from left to right and from top to bottom, as shown in FIG. 9. The other scanning path is a vertical scanning path (901). In the vertical scanning path (901), the macroblock pairs (700) of a picture (200) are coded from top to bottom and from left to right, as shown in FIG. 9. For frame mode coding, the top macroblock of a macroblock pair (700) is coded first, followed by the bottom macroblock. For field mode coding, the top field macroblock of a macroblock pair is coded first followed by the bottom field macroblock. Another embodiment of the present invention extends the concept

4. means for selectively decoding at least one of a plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode Found in claim number: '375 Patent: 13	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	of AFF coding on a pair of macroblocks to AFF coding on a group of four or more neighboring macroblocks (902), as shown in FIG. 10. AFF coding on a group of macroblocks will be occasionally referred to as group based AFF coding. The same scanning paths, horizontal (900) and vertical (901), as are used in the scanning of macroblock pairs are used in the scanning of groups of neighboring macroblocks (902). Although the example shown in FIG. 10 shows a group of four macroblocks, the group can be more than four macroblocks. If the group of macroblocks (902) is to be encoded in frame mode, the group coded as four frame-based macroblocks. In each macroblock, the two fields in each of the macroblocks are encoded jointly. Once encoded as frames, the macroblocks can be further divided into the smaller blocks of FIGS. 3a-f for use in the temporal prediction with motion compensation algorithm. However, if a group of four macroblocks (902), for example, is to be encoded in field mode, it is first split into one top field 32 by 16 pixel block and one bottom field 32 by 16 pixel block. The two fields are then coded separately. The top field block and the bottom field block can now be divided into macroblocks. Each macroblock is further divided into one of the possible block sizes of FIGS. 3a-f. Because this process is similar to that of FIG. 8, a separate figure is not provided to illustrate this embodiment. In AFF coding at the macroblock level, a frame/field flag bit is

4. means for selectively decoding at least one of a plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode Found in claim number: '375 Patent: 13	
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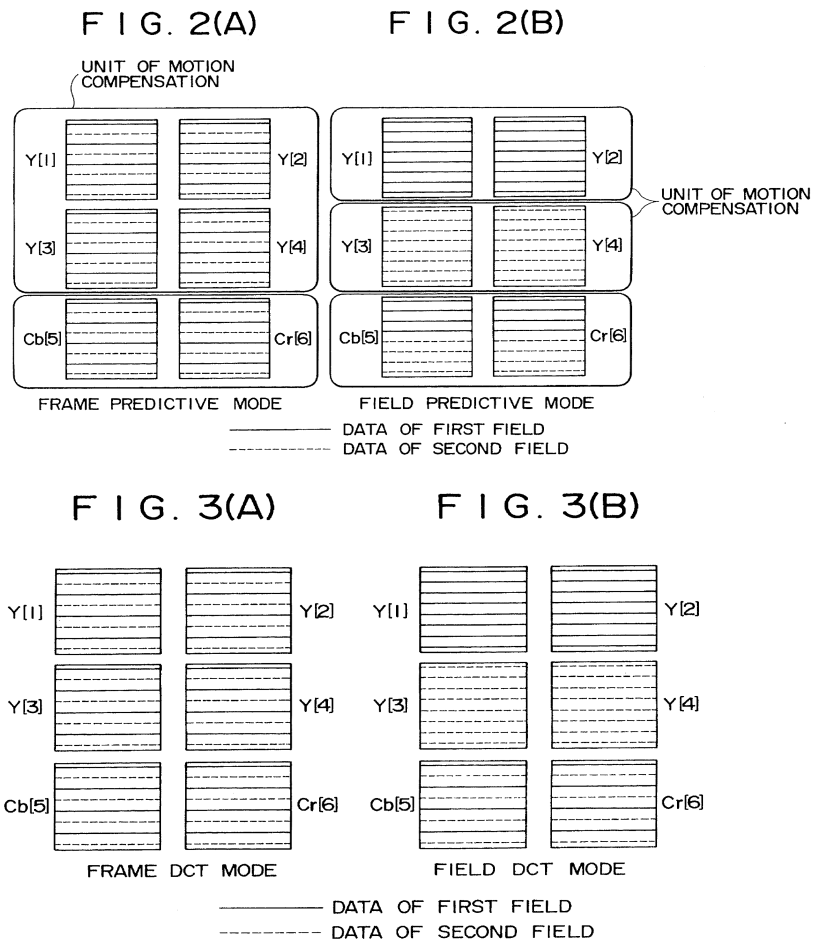
	preferably included in a picture's bitstream to indicate which mode, frame mode or field mode, is used in the encoding of each macroblock. The bitstream includes information pertinent to each macroblock within a stream, as shown in FIG. 11. For example, the bitstream can include a picture header (110), run information (111), and macroblock type (113) information. The frame/field flag (112) is preferably included before each macroblock in the bitstream if AFF is performed on each individual macroblock. If the AFF is performed on pairs of macroblocks, the frame/field flag (112) is preferably included before each pair of macroblock in the bitstream. Finally, if the AFF is performed on a group of macroblocks, the frame/field flag (112) is preferably included before each group of macroblocks in the bitstream. One embodiment is that the frame/field flag (112) bit is a 0 if frame mode is to be used and a 1 if field coding is to be used. Another embodiment is that the frame/field flag (112) bit is a 1 if frame mode is to be used and a 0 if field coding is to be used.") '374 Patent File History, Examiner's Amendment, June 23, 2007, at 2-4 (e.g., "decoding at least one of said plurality of smaller portions at a time in frame coding mode and at least one of said plurality of smaller portions at a time in field coding mode, wherein each of said smaller portions has a size that is larger than one macroblock, wherein at least one block within said at least one of said plurality of smaller portions at a time is encoded in inter coding mode ….").

4. means for selectively decoding at least one of a plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode Found in claim number: '375 Patent: 13	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	'374 Patent File History, Reasons for Allowance, June 23, 2007, at 5-6 ("Claims … are allowed as having incorporated novel features comprising … decoding at least one of said plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode, wherein each of said smaller potions has a size that is larger than one macroblock, where at least one block within at least one of said plurality of smaller portions at a time is encoded in inter coding mode …. The prior art of record fails to anticipate or make obvious the novel features (emphasis added on *underlined claims(s) limitations*) as specified above."). '375 File History, Reasons for Allowance, July 17, 2007, at 4-5. '376 File History, Reasons for Allowance, May 24, 2007, at 2-9. '374 Patent family file history, United States Patent No. 5,504,530 (to Okibane et al.) United States Patent No. 5,504,530 (to Okibane et al.) ('530 patent), Figs. 2(A), 2(B), 3(A), 3(B).

4. means for selectively decoding at least one of a plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode

Found in claim number: '375 Patent: 13

Motorola's Proposed Construction and Evidence in Support	Microsoft's Proposed Construction and Evidence in Support
	

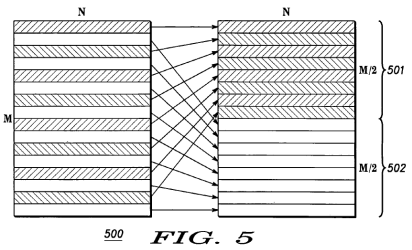
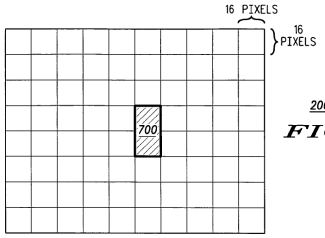
4. means for selectively decoding at least one of a plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode Found in claim number: '375 Patent: 13	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	'530 patent, at 6:2-9 ("FIGS. 2(A) and 2(B) are diagrammatic illustrations of the operation of a predictive mode change-over circuit that is part of the image signal coding apparatus of FIGS. 1(A)-1(C);") '530 patent, at 7:55-67 ("Image data representing a picture stored in the frame memory 51 is read out for processing in a frame predictive mode or a field predictive mode by a predictive mode change-over circuit 52. Further, under the control of a predictive mode determination circuit 54, calculations with respect to intra-picture prediction, forward prediction, backward prediction or bi-directional prediction are performed by a calculation section 53. The determination of which type of processing should be performed is based on a prediction error signal formed as a difference between a reference original picture for the frame being processed and a predictive picture. Accordingly, the motion vector detection circuit 50 generates predictive error signals in the form of sums of absolute values or sums of squares for the purpose of the determination. Operation of predictive mode change-over circuit 52 in a frame predictive mode and a field predictive mode will now be described. When operation is to be in the frame predictive mode, the predictive mode change-over circuit outputs four brightness blocks Y[1] to Y[4] as the same are received from the motion vector

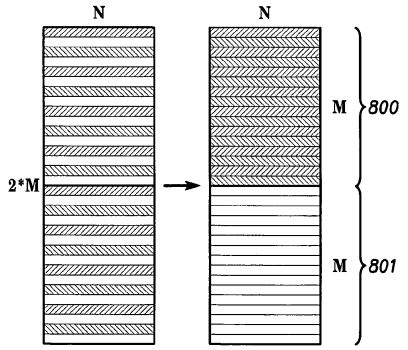
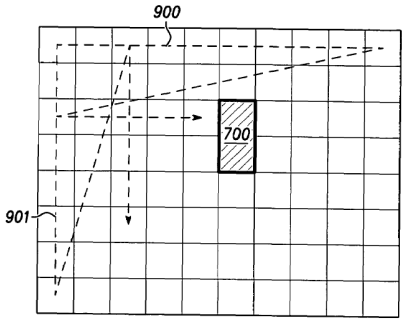
4. means for selectively decoding at least one of a plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode Found in claim number: '375 Patent: 13	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	detection circuit 50. The blocks output from predictive mode change-over circuit 52 are provided to the calculation section 53. In particular, data representing lines of both odd-numbered and even-numbered fields are presented mixed together in each block of brightness data as shown in FIG. 2(A). In the frame predictive mode, prediction is performed on the basis of four blocks of brightness data (i.e. an entire macro block) with one motion vector being provided for the four blocks of brightness data. On the other hand, in the field predictive mode, the predictive mode change-over circuit performs processing upon an input signal which is provided thereto from the motion vector detection circuit 50 so that the signal is arranged in the form shown in FIG. 2(B). Thus, the brightness data blocks Y[1] and Y[2] represent picture elements from the lines for an odd-numbered field, while the other two brightness data blocks Y[3] and Y[4] represent data for lines from even-numbered fields. The resulting data is output from predictive mode change-over circuit 52 to the calculation section 53. In this case, a motion vector for odd-numbered fields corresponds to the two blocks of brightness data Y[1] and Y[2], while a separate motion vector for even-numbered fields corresponds to the other two blocks of brightness data Y[3] and Y[4]. The motion vector detection circuit 50 outputs to the predictive mode change-over circuit 52 respective sums of absolute values of

4. means for selectively decoding at least one of a plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode Found in claim number: '375 Patent: 13	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	predictive errors for the frame predictive mode and the field predictive mode. The predictive mode change-over circuit 52 compares the two sums of predictive errors, performs processing on the absolute value sum corresponding to the predictive mode in which the absolute value sum has a lower value, and outputs the resulting data to the calculation section 53. However, according to a preferred embodiment of the invention, the processing described above is entirely performed within the motion vector detection circuit 50, which outputs a signal in the form corresponding to the appropriate predictive mode to the predictive mode change-over circuit 52, which simply passes that signal on without change to the calculation section 53. Concerning the color difference signal, it should be understood that in the frame predictive mode that signal is supplied to the calculation section 53 in the form of data for mixed lines of odd-numbered fields and even-numbered fields as shown in FIG. 2(A). On the other hand, in the field predictive mode, the first four lines of the color difference blocks Cb[5] and Cr[6] are color difference signals for odd-numbered fields corresponding to the blocks of brightness data Y[1] and Y[2], while the last four lines are color difference signals for even-numbered fields, corresponding to the blocks of brightness data Y[3] and Y[4] as shown in FIG. 2(B). The motion vector detection circuit 50 also produces a sum of absolute values of predictive errors from which it is determined

4. means for selectively decoding at least one of a plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode Found in claim number: '375 Patent: 13	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	whether the predictive mode determination circuit 54 performs intra-picture processing, forward prediction, backward prediction or bi-directional prediction.") '530 patent, at 9:62-67 ("The DCT mode change-over circuit 55 arranges data contained in the four blocks of brightness data so that, for a frame DCT mode, lines of odd-numbered and even-numbered fields are mixed, or, in a field DCT mode, so that the lines for odd-numbered fields and even-numbered fields are separated, as respectively shown in FIGS. 3(A) and 3(B). The DCT mode change-over circuit 55 outputs the resulting data to a DCT circuit 56. More specifically, the DCT mode change-over circuit 55 performs a comparison of the coding efficiency that would be provided depending on whether the data for odd-numbered fields and even-numbered fields are presented mixed together or separately, and based on the comparison selects the mode which will result in higher coding efficiency.") Extrinsic Evidence: Webster's New World Dictionary, (2nd College Ed.) at 1291 [MS-MOTO_1823_00005194926] ("**select** … adj. [L. selectus, pp. of seligere, to choose, pick out < se, apart + legere, to choose: see logic] … to choose or pick out from among others, as for excellence, desirability, etc. –vi. to make a selection; choose – SYN, see choose"). The American Heritage Dictionary of Idioms (1997) [MS-

4. means for selectively decoding at least one of a plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode Found in claim number: '375 Patent: 13	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	MOTO_1823_00005194906], at 25 ("**at a time** – see at one time, def. 1."), 30 (**at one time 1.** Simultaneously, at the same time, as in *All the boys jumped into the pool at one time*. For synonyms, see at once, def. 1; at the same time, def. 1."), 29 ("**at once 1.** At the same time, as in *We can't all fit into the boat at once*. [First half of 1200s] Also see at one time, def. 1."), 33 ("**at the same time 1.** Simultaneously, as in *We were all scheduled to leave at the same time*. This idiom was first recorded in 1526. For synonyms, see at once, def. 1; at one time, def. 1."). The American Heritage Dictionary (2nd College Ed.), at 1271 [MS-MOTO_1823_00005194898] ("**at one time. 1**. Simultaneously.").

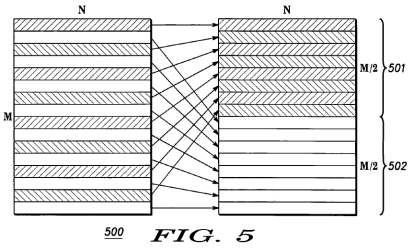
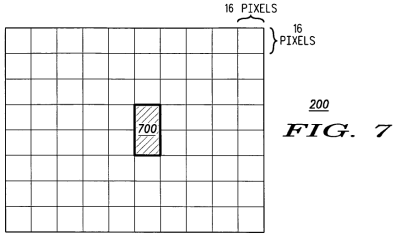
5. means for using said plurality of decoded smaller portions to construct a decoded picture Found in claim numbers: '374 Patent: 14; '375 Patent: 13	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
Proposed Construction: This is a means-plus function limitation that must be construed according to 35 U.S.C. §112,¶6 *Function*: using said plurality of decoded smaller portions to construct a decoded picture *Structure*: Decoder, and equivalents thereof Intrinsic Evidence: Exhibit A at col 4:59-5:3 ("The… decoder can be a processor, application specific integrated circuit (ASIC), field programmable gate array (FPGA), coder/decoder (CODEC), digital signal processor (DSP), or some other electronic device that is capable of encoding the stream of pictures…. The term "decoder" will be used to refer expansively to all electronic devices that decode digital video content comprising a stream of pictures.").	Proposed Construction: Function: assembling the decoded smaller portions to form a decoded "picture" Structure: a processor, application specific integrated circuit (ASIC), field programmable gate array (FPGA), coder/decoder (CODEC), or digital signal processor (DSP) performing the algorithm of assembling a decoded picture using the decoded [smaller portions/processing blocks] like bricks in a wall '374 Patent, at Figs. 5  FIG. 5 '374 Patent, at Figs. 7  FIG. 7 '374 Patent, at Figs. 8

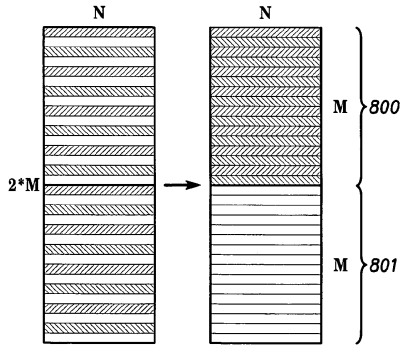
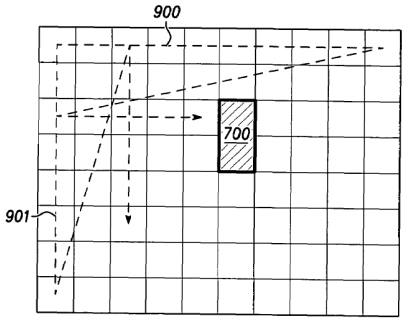
5. means for using said plurality of decoded smaller portions to construct a decoded picture Found in claim numbers: '374 Patent: 14; '375 Patent: 13	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	 '374 Patent, at Figs. 9  FIG. 9 '374 Patent, at 3:32-33 ("FIG. 5 shows that a macroblock is split into a top field and a bottom field if it is to be encoded in field mode.") '374 Patent, at 3:46-54 ("FIG. 7 illustrates an exemplary pair of macroblocks that can be used in AFF coding on a pair of

5. means for using said plurality of decoded smaller portions to construct a decoded picture Found in claim numbers: '374 Patent: 14; '375 Patent: 13	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	macroblocks according to an embodiment of the present invention.") '374 Patent, at 7:43 – 8:45 ("FIG. 7 illustrates an exemplary pair of macroblocks (700) that can be used in AFF coding on a pair of macroblocks according to an embodiment of the present invention. If the pair of macroblocks (700) is to be encoded in frame mode, the pair is coded as two frame-based macroblocks. In each macroblock, the two fields in each of the macroblocks are encoded jointly. Once encoded as frames, the macroblocks can be further divided into the smaller blocks of FIGS. 3a-f for use in the temporal prediction with motion compensation algorithm. However, if the pair of macroblocks (700) is to be encoded in field mode, it is first split into one top field 16 by 16 pixel block (800) and one bottom field 16 by 16 pixel block (801), as shown in FIG. 8. The two fields are then coded separately. In FIG. 8, each macroblock in the pair of macroblocks (700) has N=16 columns of pixels and M=16 rows of pixels. Thus, the dimensions of the pair of macroblocks (700) is 16 by 32 pixels. As shown in FIG. 8, every other row of pixels is shaded. The shaded areas represent the rows of pixels in the top field of the macroblocks and the unshaded areas represent the rows of pixels in the bottom field of the macroblocks. The top field block (800) and the bottom field block (801) can now be divided into one of the possible block sizes of FIGS. 3a-f. According to an embodiment of the present invention, in the AFF coding of pairs of macroblocks (700), there are two possible scanning paths. A scanning path determines the order in which the

5. means for using said plurality of decoded smaller portions to construct a decoded picture Found in claim numbers: '374 Patent: 14; '375 Patent: 13	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	pairs of macroblocks of a picture are encoded. FIG. 9 shows the two possible scanning paths in AFF coding of pairs of macroblocks (700). One of the scanning paths is a horizontal scanning path (900). In the horizontal scanning path (900), the macroblock pairs (700) of a picture (200) are coded from left to right and from top to bottom, as shown in FIG. 9. The other scanning path is a vertical scanning path (901). In the vertical scanning path (901), the macroblock pairs (700) of a picture (200) are coded from top to bottom and from left to right, as shown in FIG. 9. For frame mode coding, the top macroblock of a macroblock pair (700) is coded first, followed by the bottom macroblock. For field mode coding, the top field macroblock of a macroblock pair is coded first followed by the bottom field macroblock. Another embodiment of the present invention extends the concept of AFF coding on a pair of macroblocks to AFF coding on a group of four or more neighboring macroblocks (902), as shown in FIG. 10. AFF coding on a group of macroblocks will be occasionally referred to as group based AFF coding. The same scanning paths, horizontal (900) and vertical (901), as are used in the scanning of macroblock pairs are used in the scanning of groups of neighboring macroblocks (902). Although the example shown in FIG. 10 shows a group of four macroblocks, the group can be more than four macroblocks. If the group of macroblocks (902) is to be encoded in frame mode, the group coded as four frame-based macroblocks. In each macroblock, the two fields in each of the macroblocks are encoded

5. means for using said plurality of decoded smaller portions to construct a decoded picture Found in claim numbers: '374 Patent: 14; '375 Patent: 13	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	jointly. Once encoded as frames, the macroblocks can be further divided into the smaller blocks of FIGS. 3a-f for use in the temporal prediction with motion compensation algorithm. However, if a group of four macroblocks (902), for example, is to be encoded in field mode, it is first split into one top field 32 by 16 pixel block and one bottom field 32 by 16 pixel block. The two fields are then coded separately. The top field block and the bottom field block can now be divided into macroblocks. Each macroblock is further divided into one of the possible block sizes of FIGS. 3a-f. Because this process is similar to that of FIG. 8, a separate figure is not provided to illustrate this embodiment.") Extrinsic Evidence: The American Heritage Dictionary (2nd College Ed.) at 315 [MS-MOTO_1823_00005194890] ("**construct** … 1. To form by assembling parts; build.").

6. means for using said plurality of decoded processing blocks to construct a decoded picture Found in claim number: '376 Patent: 22	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
Proposed Construction: This is a means-plus function limitation that must be construed according to 35 U.S.C. §112,¶6 *Function*: using said plurality of decoded processing blocks to construct a decoded picture *Structure*: Decoder, and equivalents thereof Intrinsic Evidence: Exhibit C at col 4:59-5:3 ("The… decoder can be a processor, application specific integrated circuit (ASIC), field programmable gate array (FPGA), coder/decoder (CODEC), digital signal processor (DSP), or some other electronic device that is capable of encoding the stream of pictures…. The term "decoder" will be used to refer expansively to all electronic devices that decode digital video content comprising a stream of pictures.").	Proposed Construction: Function: assembling the decoded processing blocks to form a decoded "picture" Structure: a processor, application specific integrated circuit (ASIC), field programmable gate array (FPGA), coder/decoder (CODEC), or digital signal processor (DSP) performing the algorithm of assembling a decoded picture using the decoded [smaller portions/processing blocks] like bricks in a wall '374 Patent, at Figs. 5  FIG. 5 '374 Patent, at Figs. 7  FIG. 7 '374 Patent, at Figs. 8

6. means for using said plurality of decoded processing blocks to construct a decoded picture Found in claim number: '376 Patent: 22	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	 '374 Patent, at Figs. 9  FIG. 9 '374 Patent, at 3:32-33 ("FIG. 5 shows that a macroblock is split into a top field and a bottom field if it is to be encoded in field mode.") '374 Patent, at 3:46-54 ("FIG. 7 illustrates an exemplary pair of macroblocks that can be used in AFF coding on a pair of

6. means for using said plurality of decoded processing blocks to construct a decoded picture Found in claim number: '376 Patent: 22	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	macroblocks according to an embodiment of the present invention.") '374 Patent, at 7:43 – 8:45 ("FIG. 7 illustrates an exemplary pair of macroblocks (700) that can be used in AFF coding on a pair of macroblocks according to an embodiment of the present invention. If the pair of macroblocks (700) is to be encoded in frame mode, the pair is coded as two frame-based macroblocks. In each macroblock, the two fields in each of the macroblocks are encoded jointly. Once encoded as frames, the macroblocks can be further divided into the smaller blocks of FIGS. 3a-f for use in the temporal prediction with motion compensation algorithm. However, if the pair of macroblocks (700) is to be encoded in field mode, it is first split into one top field 16 by 16 pixel block (800) and one bottom field 16 by 16 pixel block (801), as shown in FIG. 8. The two fields are then coded separately. In FIG. 8, each macroblock in the pair of macroblocks (700) has N=16 columns of pixels and M=16 rows of pixels. Thus, the dimensions of the pair of macroblocks (700) is 16 by 32 pixels. As shown in FIG. 8, every other row of pixels is shaded. The shaded areas represent the rows of pixels in the top field of the macroblocks and the unshaded areas represent the rows of pixels in the bottom field of the macroblocks. The top field block (800) and the bottom field block (801) can now be divided into one of the possible block sizes of FIGS. 3a-f. According to an embodiment of the present invention, in the AFF coding of pairs of macroblocks (700), there are two possible scanning paths. A scanning path determines the order in which the

6. means for using said plurality of decoded processing blocks to construct a decoded picture Found in claim number: '376 Patent: 22	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	pairs of macroblocks of a picture are encoded. FIG. 9 shows the two possible scanning paths in AFF coding of pairs of macroblocks (700). One of the scanning paths is a horizontal scanning path (900). In the horizontal scanning path (900), the macroblock pairs (700) of a picture (200) are coded from left to right and from top to bottom, as shown in FIG. 9. The other scanning path is a vertical scanning path (901). In the vertical scanning path (901), the macroblock pairs (700) of a picture (200) are coded from top to bottom and from left to right, as shown in FIG. 9. For frame mode coding, the top macroblock of a macroblock pair (700) is coded first, followed by the bottom macroblock. For field mode coding, the top field macroblock of a macroblock pair is coded first followed by the bottom field macroblock. Another embodiment of the present invention extends the concept of AFF coding on a pair of macroblocks to AFF coding on a group of four or more neighboring macroblocks (902), as shown in FIG. 10. AFF coding on a group of macroblocks will be occasionally referred to as group based AFF coding. The same scanning paths, horizontal (900) and vertical (901), as are used in the scanning of macroblock pairs are used in the scanning of groups of neighboring macroblocks (902). Although the example shown in FIG. 10 shows a group of four macroblocks, the group can be more than four macroblocks. If the group of macroblocks (902) is to be encoded in frame mode, the group coded as four frame-based macroblocks. In each macroblock, the two fields in each of the macroblocks are encoded

6. means for using said plurality of decoded processing blocks to construct a decoded picture Found in claim number: '376 Patent: 22	
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	jointly. Once encoded as frames, the macroblocks can be further divided into the smaller blocks of FIGS. 3a-f for use in the temporal prediction with motion compensation algorithm. However, if a group of four macroblocks (902), for example, is to be encoded in field mode, it is first split into one top field 32 by 16 pixel block and one bottom field 32 by 16 pixel block. The two fields are then coded separately. The top field block and the bottom field block can now be divided into macroblocks. Each macroblock is further divided into one of the possible block sizes of FIGS. 3a-f. Because this process is similar to that of FIG. 8, a separate figure is not provided to illustrate this embodiment.") Extrinsic Evidence: The American Heritage Dictionary (2nd College Ed.) at 315 [MS-MOTO_1823_00005194890] ("**construct** … 1. To form by assembling parts; build.").

7. wherein at least one block within [said] at least one of said plurality of smaller portions [at a time] is encoded in inter coding mode Found in claim numbers: '374 Patent: 8, 14	
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Proposed Construction: wherein at least one block within [said] at least one of said plurality of smaller portions [at a time] is encoded in inter coding mode, a coding mode that uses information from both within the picture and from other pictures Intrinsic Evidence: Exhibit A at col 18:44-54 ("A method of decoding an encoded picture having a plurality of smaller portions from a bitstream, comprising: decoding at least one of said plurality of smaller portions at a time in frame coding mode and at least one of said plurality of smaller portions at a time in field coding mode, wherein each of said smaller portions has a size that is larger than one macroblock, wherein at least one block within said at least one of said plurality of smaller portions at a time is encoded in inter coding mode; and using said plurality of decoded smaller portions to construct a decoded picture."); Exhibit A at col 9:9-15 ("According to an embodiment of the present invention, each frame and field based macroblock in macroblock level AFF can be intra coded or inter coded. In intra coding, the macroblock is encoded without temporally referring to other macroblocks. On the other hand, in inter coding, temporal prediction with motion compensation is used to code the macroblocks."); Exhibit A at col 9:16-35 ("If inter coding is used, a block with a size of 16 by 16 pixels, 16 by 8 pixels, 8 by 16 pixels, or 8 by 8 pixels can have its own reference pictures. The block can either be a frame or field	Proposed Construction: encoding at least one block within at least one of said plurality of smaller portions at a time in inter coding mode Intrinsic Evidence: '374 Patent at 9:11-15, ("In intra coding, the macroblock is encoded without temporally referring to other macroblocks. On the other hand, in inter coding, temporal prediction with motion compensation is used to code the macroblocks.")

7. wherein at least one block within [said] at least one of said plurality of smaller portions [at a time] is encoded in inter coding mode Found in claim numbers: '374 Patent: 8, 14	
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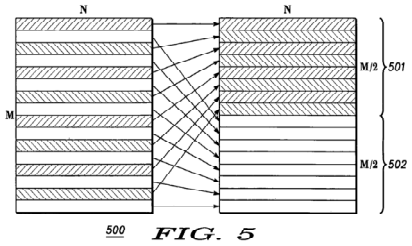
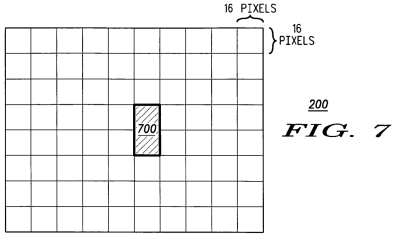
based macroblock. The MPEG-4 Part 10 AVC/H.264 standard allows multiple reference pictures instead of just two reference pictures. The use of multiple reference pictures improves the performance of the temporal prediction with motion compensation algorithm by allowing the encoder to find a block in the reference picture that most closely matches the block that is to be encoded. By using the block in the reference picture in the coding process that most closely matches the block that is to be encoded, the greatest amount of compression is possible in the encoding of the picture. The reference pictures are stored in frame and field buffers and are assigned reference frame numbers and reference field numbers based on the temporal distance they are away from the current picture that is being encoded. The closer the reference picture is to the current picture that is being stored, the more likely the reference picture will be selected."); Exhibit A at col 9:41-42 ("in inter coding, prediction motion vectors (PMV) are also calculated for each block."); Exhibit A at col 4:38-39 (incorporating by reference Exhibit N at MS-MOTO_1823_00001461767) ("Intra coded pictures (I-pictures) are coded without reference to other pictures. They provide access points to the coded sequence where decoding can begin, but are coded with only moderate compression. Inter-coded pictures (P-pictures) are coded more efficiently using motion compensated prediction of each block of sample values from some previously decoded picture selected by the encoder."); Exhibit A at col 4:38-39 (incorporating by reference Exhibit N at MS-MOTO_1823_00001461772) ("3.37 inter coding: Coding of a	

7. wherein at least one block within [said] at least one of said plurality of smaller portions [at a time] is encoded in inter coding mode Found in claim numbers: '374 Patent: 8, 14	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
block, macroblock, slice, or picture that uses information from both, within the picture and from other pictures."); Exhibit A at col 4:38-39 (incorporating by reference Exhibit N at MS-MOTO_1823_00001461773) ("motion compensation: Part of the inter prediction process for sample values, using previously decoded samples that are spatially displaced as signalled by means of motion vectors.").	

8. decoding at least one of said plurality of smaller portions at a time in frame coding mode and at least one of said plurality of smaller portions at a time in field coding mode Found in claim number: '374 Patent: 8	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
Proposed Construction: decoding more than one macroblock together in frame coding mode and more than one macroblock together in field coding mode Intrinsic Evidence: Exhibit A at col 18:44-54 ("A method of decoding an encoded picture having a plurality of smaller portions from a bitstream, comprising: decoding at least one of said plurality of smaller portions at a time in frame coding mode and at least one of said plurality of smaller portions at a time in field coding mode, wherein each of said smaller portions has a size that is larger than one macroblock, wherein at least one block within said at least one of said plurality of smaller portions at a time is encoded in inter coding mode; and using said plurality of decoded smaller portions to construct a decoded picture."); Exhibit A at col 6:57-64 ("An embodiment of the present invention is that AFF coding can be performed on smaller portions of a picture. This small portion can be a macroblock, a pair of macroblocks, or a group of macroblocks. Each macroblock, pair of macroblocks, or group of macroblocks or slice is encoded in frame mode or in field mode, regardless of how the other macroblocks in the picture are encoded. AFF coding in each of the three cases will be described in detail below."); Exhibit A at col 8:46-60 ("In AFF coding at the macroblock level, a frame/field flag bit is preferably included in a picture's bitstream to indicate which mode, frame mode or field mode, is used in the encoding of each macroblock. The bitstream	Proposed Construction: removing the frame coding mode from more than one macroblock together and removing the field coding mode from more than one macroblock together to obtain at least one of a plurality of decoded smaller portions Intrinsic Evidence: '374 Patent, at Figs. 5  FIG. 5 '374 Patent, at Figs. 7  FIG. 7 '374 Patent, at Figs. 8

8. decoding at least one of said plurality of smaller portions at a time in frame coding mode and at least one of said plurality of smaller portions at a time in field coding mode Found in claim number: '374 Patent: 8	
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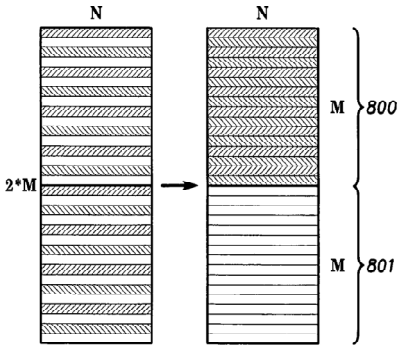
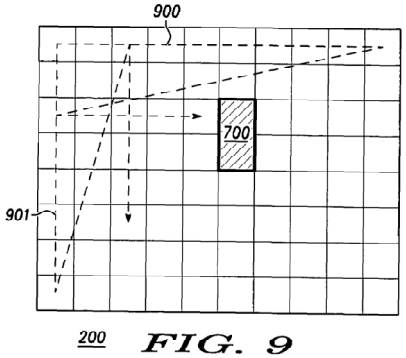
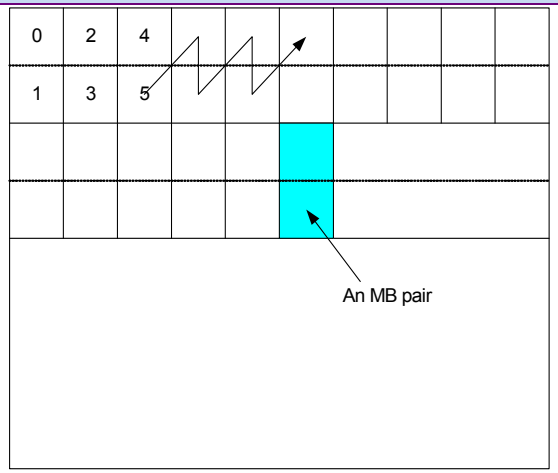
includes information pertinent to each macroblock within a stream, as shown in FIG. 11. For example, the bitstream can include a picture header (110), run information (111), and macroblock type (113) information. The frame/field flag (112) is preferably included before each macroblock in the bitstream if AFF is performed on each individual macroblock. If the AFF is performed on pairs of macroblocks, the frame/field flag (112) is preferably included before each pair of macroblock in the bitstream. Finally, if the AFF is performed on a group of macroblocks, the frame/field flag (112) is preferably included before each group of macroblocks in the bitstream."); Exhibit A at col 8:14-18 ("For frame mode coding, the top macroblock of a macroblock pair (700) is coded first, followed by the bottom macroblock. For field mode coding, the top field macroblock of a macroblock pair is coded first followed by the bottom field macroblock.");	 '374 Patent, at Figs. 9  FIG. 9 '374 Patent, at 3:32-33 ("FIG. 5 shows that a macroblock is split into a top field and a bottom field if it is to be encoded in field mode.") '374 Patent, at 3:46-54 ("

8. decoding at least one of said plurality of smaller portions at a time in frame coding mode and at least one of said plurality of smaller portions at a time in field coding mode Found in claim number: '374 Patent: 8	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
 Exhibit A at col 4:38-39 (incorporating by reference Exhibit N at MS-MOTO_1823_00001461781) ("Figure 6-4 – Partitioning of the decoded frame into macroblock pairs. An MB pair can be coded as two frame MBs, or one top-field MB and one bottom-field MB. The numbers indicate the scanning order of coded MBs."); Exhibit A at col 4:38-39 (incorporating by reference Exhibit N at MS-MOTO_1823_00001461773) ("3.50 macroblock pair: A pair of vertically-contiguous macroblocks in a picture that is coupled for use in macroblock-adaptive frame/field decoder processing.); Exhibit A at col 16:12-59 ("If the above macroblock pair (170) is decoded in field mode, then for blocks number 0, 1, 4 and 5 in the top-field macroblock (173), blocks numbered 10, 11, 14 and 15 respectively in the top-field macroblock (173) of the	FIG. 7 illustrates an exemplary pair of macroblocks that can be used in AFF coding on a pair of macroblocks according to an embodiment of the present invention.") '374 Patent, at 7:1-6 ("Once encoded as a frame, the macroblocks can be further divided … for use in the temporal prediction with motion compensation algorithm. However, if the macroblock is to be encoded in field mode, the macroblock (500) is split into a top field (501) and a bottom field (502), as shown in FIG. 5.") '374 Patent, at 7:43 – 8:45 ("FIG. 7 illustrates an exemplary pair of macroblocks (700) that can be used in AFF coding on a pair of macroblocks according to an embodiment of the present invention. If the pair of macroblocks (700) is to be encoded in frame mode, the pair is coded as two frame-based macroblocks. In each macroblock, the two fields in each of the macroblocks are encoded jointly. Once encoded as frames, the macroblocks can be further divided into the smaller blocks of FIGS. 3a-f for use in the temporal prediction with motion compensation algorithm. However, if the pair of macroblocks (700) is to be encoded in field mode, it is first split into one top field 16 by 16 pixel block (800) and one bottom field 16 by 16 pixel block (801), as shown in FIG. 8. The two fields are then coded separately. In FIG. 8, each macroblock in the pair of macroblocks (700) has N=16 columns of pixels and M=16 rows of pixels. Thus, the dimensions of the pair

8. decoding at least one of said plurality of smaller portions at a time in frame coding mode and at least one of said plurality of smaller portions at a time in field coding mode Found in claim number: '374 Patent: 8	
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above macroblock pair (170) shall be considered as the above neighboring blocks to the current macroblock pair (171) as shown in FIG. 17a. For blocks number 0, 1, 4 and 5 in the bottom-field macroblock (174), blocks numbered 10, 11, 14 and 15 respectively in the bottom-field MB of the above macroblock pair (170) shall be considered as the above neighboring blocks to the current macroblock pair (171), as shown in FIG. 17a. However, if the above macroblock pair (170) is decoded in frame mode then for blocks number 0, 1, 4 and 5 in the top-field macroblock (173), blocks numbered 10, 11, 14 and 15 respectively in the bottom-frame macroblock (176) of the above macroblock pair (170) shall be considered as the above neighboring blocks to the current macroblock pair (171), as shown in FIG. 17b. For blocks number 0, 1, 4 and 5 in the bottom-field macroblock (174), blocks numbered 10, 11, 14 and 15 respectively in the bottom-frame macroblock (176) of the above macroblock pair (170) shall be considered as the above neighboring blocks to the current macroblock pair (171), as shown inn FIG. 17b. If the left macroblock pair (172) is decoded in field mode, then for blocks number 0, 2, 8 and 10 in the top-field macroblock (173), blocks numbered 5, 7, 13 and 15 respectively in the top-field macroblock (173) of the left macroblock pair (172) shall be considered as the left neighboring blocks to the current macroblock pair (171) as shown in FIG. 17c. For blocks number 0, 2, 8 and 10 in the bottom-field macroblock (174), blocks	of macroblocks (700) is 16 by 32 pixels. As shown in FIG. 8, every other row of pixels is shaded. The shaded areas represent the rows of pixels in the top field of the macroblocks and the unshaded areas represent the rows of pixels in the bottom field of the macroblocks. The top field block (800) and the bottom field block (801) can now be divided into one of the possible block sizes of FIGS. 3a-f. According to an embodiment of the present invention, in the AFF coding of pairs of macroblocks (700), there are two possible scanning paths. A scanning path determines the order in which the pairs of macroblocks of a picture are encoded. FIG. 9 shows the two possible scanning paths in AFF coding of pairs of macroblocks (700). One of the scanning paths is a horizontal scanning path (900). In the horizontal scanning path (900), the macroblock pairs (700) of a picture (200) are coded from left to right and from top to bottom, as shown in FIG. 9. The other scanning path is a vertical scanning path (901). In the vertical scanning path (901), the macroblock pairs (700) of a picture (200) are coded from top to bottom and from left to right, as shown in FIG. 9. For frame mode coding, the top macroblock of a macroblock pair (700) is coded first, followed by the bottom macroblock. For field mode coding, the top field macroblock of a macroblock pair is coded first followed by the bottom field macroblock.

8. decoding at least one of said plurality of smaller portions at a time in frame coding mode and at least one of said plurality of smaller portions at a time in field coding mode Found in claim number: '374 Patent: 8	
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numbered 5, 7, 13 and 15 respectively in the bottom-field macroblock (174) of the left macroblock pair (172) shall be considered as the left neighboring blocks to the current macroblock pair (171), as shown in FIG. 17c. If the left macroblock pair (172) is decoded in frame mode, then for blocks number 0, 2, 8 and 10 in the top-field macroblock (173), the blocks numbered 5, 7, 13 and 15 respectively in the top-frame macroblock (175) of the left macroblock pair (172) shall be considered as the left neighboring blocks to the current macroblock pair (171), as shown in FIG. 17d. For blocks number 0, 2, 8 and 10 in the bottom-field macroblock (174), blocks numbered 5, 7, 13 and 15 respectively in the bottom-frame macroblock (176) of the left macroblock pair (172) shall be considered as the left neighboring blocks to the current macroblock pair (171), as shown in FIG. 17d."). Extrinsic Evidence: Exhibit X at MOTM_WASH1823_0055403 ("field macroblock pair: A macroblock pair decoded as two field macroblocks."); Exhibit X at MOTM_WASH1823_0055403 ("frame macroblock pair: A macroblock pair decoded as two frame macroblocks."); Exhibit X MOTM_WASH1823_0055404 ("macroblock pair: A pair of vertically contiguous macroblocks in a frame that is coupled for use in macroblock-adaptive frame/field decoding. The division of a slice into macroblock pairs is a partitioning.").	Another embodiment of the present invention extends the concept of AFF coding on a pair of macroblocks to AFF coding on a group of four or more neighboring macroblocks (902), as shown in FIG. 10. AFF coding on a group of macroblocks will be occasionally referred to as group based AFF coding. The same scanning paths, horizontal (900) and vertical (901), as are used in the scanning of macroblock pairs are used in the scanning of groups of neighboring macroblocks (902). Although the example shown in FIG. 10 shows a group of four macroblocks, the group can be more than four macroblocks. If the group of macroblocks (902) is to be encoded in frame mode, the group coded as four frame-based macroblocks. In each macroblock, the two fields in each of the macroblocks are encoded jointly. Once encoded as frames, the macroblocks can be further divided into the smaller blocks of FIGS. 3a-f for use in the temporal prediction with motion compensation algorithm. However, if a group of four macroblocks (902), for example, is to be encoded in field mode, it is first split into one top field 32 by 16 pixel block and one bottom field 32 by 16 pixel block. The two fields are then coded separately. The top field block and the bottom field block can now be divided into macroblocks. Each macroblock is further divided into one of the possible block sizes of FIGS. 3a-f. Because this process is similar to that of FIG. 8, a separate figure is not provided to illustrate this embodiment.")

8. decoding at least one of said plurality of smaller portions at a time in frame coding mode and at least one of said plurality of smaller portions at a time in field coding mode Found in claim number: '374 Patent: 8	
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	'374 Patent File History, Examiner's Amendment, June 23, 2007, at 2-4 (e.g., "decoding at least one of said plurality of smaller portions at a time in frame coding mode and at least one of said plurality of smaller portions at a time in field coding mode, wherein each of said smaller portions has a size that is larger than one macroblock, wherein at least one block within said at least one of said plurality of smaller portions at a time is encoded in inter coding mode …."). '374 Patent File History, Reasons for Allowance, June 23, 2007, at 5-6 ("Claims … are allowed as having incorporated novel features comprising … decoding at least one of said plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode, wherein each of said smaller potions has a size that is larger than one macroblock, where at least one block within at least one of said plurality of smaller portions at a time is encoded in inter coding mode …. The prior art of record fails to anticipate or make obvious the novel features (emphasis added on *underlined claims(s) limitations*) as specified above."). '375 File History, Reasons for Allowance, July 17, 2007, at 4-5.

8. decoding at least one of said plurality of smaller portions at a time in frame coding mode and at least one of said plurality of smaller portions at a time in field coding mode Found in claim number: '374 Patent: 8	
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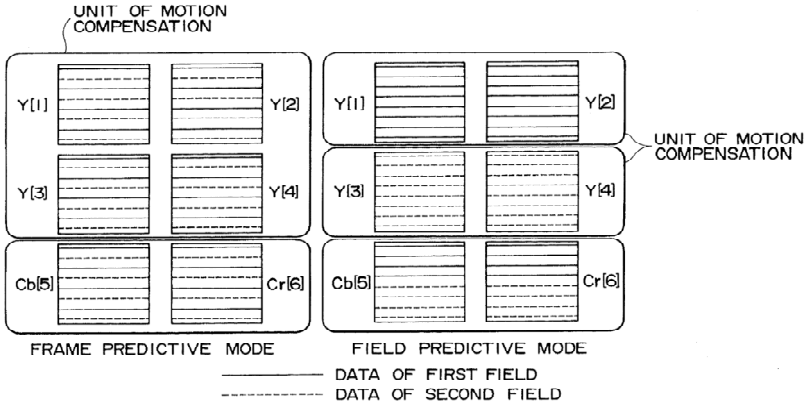
	'376 File History, Reasons for Allowance, May 24, 2007, at 2-9. '374 Patent family file history, United States Patent No. 5,504,530 (to Okibane et al.) United States Patent No. 5,504,530 (to Okibane et al.) ('530 patent), Figs. 2(A), 2(B), 3(A), 3(B). FIG. 2(A) FIG. 2(B) 

8. decoding at least one of said plurality of smaller portions at a time in frame coding mode and at least one of said plurality of smaller portions at a time in field coding mode Found in claim number: '374 Patent: 8	
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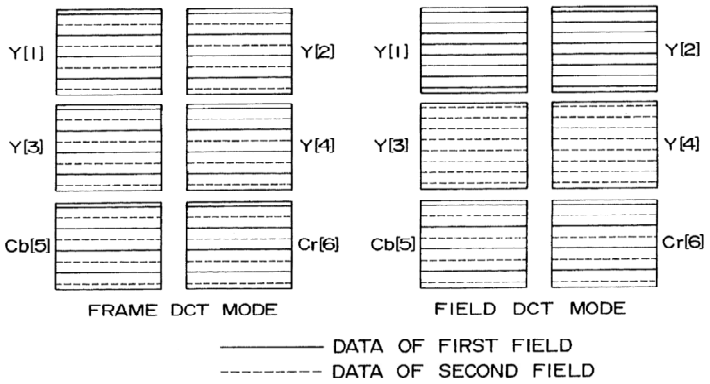
	FIG. 3(A) FIG. 3(B)  '530 patent, at 6:2-9 ("FIGS. 2(A) and 2(B) are diagrammatic illustrations of the operation of a predictive mode change-over circuit that is part of the image signal coding apparatus of FIGS. 1(A)-1(C);") '530 patent, at 7:55-67 ("Image data representing a picture stored in the frame memory 51 is read out for processing in a frame predictive mode or a field predictive mode by a predictive mode change-over circuit 52. Further, under the control of a predictive mode determination circuit 54, calculations with respect to intra-picture prediction, forward prediction, backward prediction or bi-directional prediction are performed by a calculation section 53. The determination of which type of processing should be

8. decoding at least one of said plurality of smaller portions at a time in frame coding mode and at least one of said plurality of smaller portions at a time in field coding mode Found in claim number: '374 Patent: 8	
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	performed is based on a prediction error signal formed as a difference between a reference original picture for the frame being processed and a predictive picture. Accordingly, the motion vector detection circuit 50 generates predictive error signals in the form of sums of absolute values or sums of squares for the purpose of the determination. Operation of predictive mode change-over circuit 52 in a frame predictive mode and a field predictive mode will now be described. When operation is to be in the frame predictive mode, the predictive mode change-over circuit outputs four brightness blocks Y[1] to Y[4] as the same are received from the motion vector detection circuit 50. The blocks output from predictive mode change-over circuit 52 are provided to the calculation section 53. In particular, data representing lines of both odd-numbered and even-numbered fields are presented mixed together in each block of brightness data as shown in FIG. 2(A). In the frame predictive mode, prediction is performed on the basis of four blocks of brightness data (i.e. an entire macro block) with one motion vector being provided for the four blocks of brightness data. On the other hand, in the field predictive mode, the predictive mode change-over circuit performs processing upon an input signal which is provided thereto from the motion vector detection circuit 50 so that the signal is arranged in the form shown in FIG.

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	2(B). Thus, the brightness data blocks Y[1] and Y[2] represent picture elements from the lines for an odd-numbered field, while the other two brightness data blocks Y[3] and Y[4] represent data for lines from even-numbered fields. The resulting data is output from predictive mode change-over circuit 52 to the calculation section 53. In this case, a motion vector for odd-numbered fields corresponds to the two blocks of brightness data Y[1] and Y[2], while a separate motion vector for even-numbered fields corresponds to the other two blocks of brightness data Y[3] and Y[4]. The motion vector detection circuit 50 outputs to the predictive mode change-over circuit 52 respective sums of absolute values of predictive errors for the frame predictive mode and the field predictive mode. The predictive mode change-over circuit 52 compares the two sums of predictive errors, performs processing on the absolute value sum corresponding to the predictive mode in which the absolute value sum has a lower value, and outputs the resulting data to the calculation section 53. However, according to a preferred embodiment of the invention, the processing described above is entirely performed within the motion vector detection circuit 50, which outputs a signal in the form corresponding to the appropriate predictive mode to the predictive mode change-over circuit 52, which simply passes that signal on without change to the calculation section 53.

8. decoding at least one of said plurality of smaller portions at a time in frame coding mode and at least one of said plurality of smaller portions at a time in field coding mode Found in claim number: '374 Patent: 8	
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	Concerning the color difference signal, it should be understood that in the frame predictive mode that signal is supplied to the calculation section 53 in the form of data for mixed lines of odd-numbered fields and even-numbered fields as shown in FIG. 2(A). On the other hand, in the field predictive mode, the first four lines of the color difference blocks Cb[5] and Cr[6] are color difference signals for odd-numbered fields corresponding to the blocks of brightness data Y[1] and Y[2], while the last four lines are color difference signals for even-numbered fields, corresponding to the blocks of brightness data Y[3] and Y[4] as shown in FIG. 2(B). The motion vector detection circuit 50 also produces a sum of absolute values of predictive errors from which it is determined whether the predictive mode determination circuit 54 performs intra-picture processing, forward prediction, backward prediction or bi-directional prediction.") '530 patent, at 9:62-67 ("The DCT mode change-over circuit 55 arranges data contained in the four blocks of brightness data so that, for a frame DCT mode, lines of odd-numbered and even-numbered fields are mixed, or, in a field DCT mode, so that the lines for odd-numbered fields and even-numbered fields are separated, as respectively shown in FIGS. 3(A) and 3(B). The DCT mode change-over circuit 55 outputs the resulting data to a DCT circuit 56. More specifically, the DCT mode change-over circuit 55 performs a comparison of the coding efficiency that would be provided depending on whether the data for odd-numbered fields and even-numbered fields are presented mixed

8. decoding at least one of said plurality of smaller portions at a time in frame coding mode and at least one of said plurality of smaller portions at a time in field coding mode Found in claim number: '374 Patent: 8	
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	together or separately, and based on the comparison selects the mode which will result in higher coding efficiency.") Extrinsic Evidence: The American Heritage Dictionary of Idioms (1997) [MS-MOTO_1823_00005194906], at 25 ("**at a time** – see at one time, def. 1."), 30 (**at one time 1.** Simultaneously, at the same time, as in *All the boys jumped into the pool at one time*. For synonyms, see at once, def. 1; at the same time, def. 1."), 29 ("**at once 1.** At the same time, as in *We can't all fit into the boat at once*. [First half of 1200s] Also see at one time, def. 1."), 33 ("**at the same time 1.** Simultaneously, as in *We were all scheduled to leave at the same time*. This idiom was first recorded in 1526. For synonyms, see at once, def. 1; at one time, def. 1."). The American Heritage Dictionary (2nd College Ed.), at 1271 [MS-MOTO_1823_00005194898] ("**at one time. 1**. Simultaneously.").

9. means for decoding at least one of a plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode Found in claim number: '374 Patent: 14	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
Proposed Construction: This is a means-plus function limitation that must be construed according to 35 U.S.C. §112,¶6 *Function*: Decoding at least one of a plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode, wherein each of said smaller portions has a size that is larger than one macroblock *Structure*: Decoder, and equivalents thereof Intrinsic Evidence: Exhibit A at col 4:58-5:3 ("the decoder decodes the pictures. The… decoder can be a processor, application specific integrated circuit (ASIC), field programmable gate array (FPGA), coder/decoder (CODEC), digital signal processor (DSP), or some other electronic device that is capable of encoding the stream of pictures…. The term "decoder" will be used to refer expansively to all electronic devices that decode digital video content comprising a stream of pictures.").	Proposed Construction: Function: removing the frame coding mode from more than one macroblock together and removing the field coding mode from more than one macroblock together to obtain at least one of a plurality of decoded smaller portions Structure: a processor, application specific integrated circuit (ASIC), field programmable gate array (FPGA), coder/decoder (CODEC), or digital signal processor (DSP) performing the algorithm of: in field mode, creating in memory one or more macroblocks each containing one field and one or more macroblocks each containing the other field and processing each such macroblock together with the other macroblocks to create in memory at least two macroblocks containing lines from both fields and in frame mode, creating in memory one or more macroblocks each containing lines from both fields and processing each such macroblock together to create in memory at least two macroblocks containing lines from both fields Intrinsic Evidence: '374 Patent, at Figs. 5

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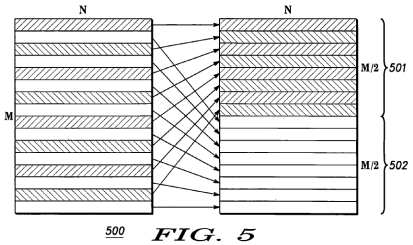
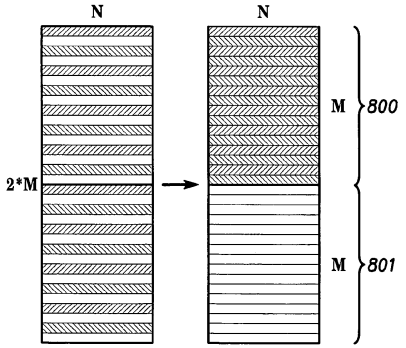
	 FIG. 5 '374 Patent, at Figs. 8  '374 Patent, at 3:32-33 ("FIG. 5 shows that a macroblock is split into a top field and a bottom field if it is to be encoded in field mode.") '374 Patent, at 3:50-52 ("FIG. 8 shows that a pair of macroblocks that is to be encoded in field mode is first split into one top field 16

9. means for decoding at least one of a plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode Found in claim number: '374 Patent: 14	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	by 16 pixel block and one bottom field 16 by 16 pixel block.") '374 Patent, at 4:17-34 (" The present invention provides a method of adaptive frame/field (AFF) coding of digital video content comprising a stream of pictures or slices of a picture at a macroblock level. The present invention extends the concept of picture level AFF to macroblocks. In AFF coding at a picture level, each picture in a stream of pictures that is to be encoded is encoded in either frame mode or in field mode, regardless of the frame or field coding mode of other pictures that are to be coded. If a picture is encoded in frame mode, the two fields that make up an interlaced frame are coded jointly. Conversely, if a picture is encoded in field mode, the two fields that make up an interlaced frame are coded separately. The encoder determines which type of coding, frame mode coding or field mode coding, is more advantageous for each picture and chooses that type of encoding for the picture. The exact method of choosing between frame mode and field mode is not critical to the present invention and will not be detailed herein.") '374 Patent, at 6:50-57 ("Picture level AFF is preferable to fixed frame/field coding in many applications because it allows the encoder to chose which mode, frame mode or field mode, to encode each picture in the stream of pictures based on the contents of the digital video material. AFF coding results in better

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Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
	compression than does fixed frame/field coding in many applications. An embodiment of the present invention is that AFF coding can be performed on smaller portions of a picture.") '374 Patent, at 6:58-64 ("An embodiment of the present invention is that AFF coding can be performed on smaller portions of a picture. This small portion can be a macroblock, a pair of macroblocks, or a group of macroblocks. Each macroblock, pair of macroblocks, or group of macroblocks or slice is encoded in frame mode or in field mode, regardless of how the other macroblocks in the picture are encoded. AFF coding in each of the three cases will be described in detail below.") '374 Patent, at 7:26 – 8:65 ("AFF coding on macroblock pairs will now be explained. AFF coding on macroblock pairs will be occasionally referred to as pair based AFF coding. A comparison of the block sizes in FIGS. 6a-d and in FIGS. 3a-f show that a macroblock encoded in field mode can be divided into fewer block patterns than can a macroblock encoded in frame mode. The block sizes of 16 by 16 pixels, 8 by 16 pixels, and 8 by 4 pixels are not available for a macroblock encoded in field mode because of the single parity requirement. This implies that the performance of single macroblock based AFF may not be good for some sequences or applications that strongly favor field mode coding. In

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	order to guarantee the performance of field mode macroblock coding, it is preferable in some applications for macroblocks that are coded in field mode to have the same block sizes as macroblocks that are coded in frame mode. This can be achieved by performing AFF coding on macroblock pairs instead of on single macroblocks. FIG. 7 illustrates an exemplary pair of macroblocks (700) that can be used in AFF coding on a pair of macroblocks according to an embodiment of the present invention. If the pair of macroblocks (700) is to be encoded in frame mode, the pair is coded as two frame-based macroblocks. In each macroblock, the two fields in each of the macroblocks are encoded jointly. Once encoded as frames, the macroblocks can be further divided into the smaller blocks of FIGS. 3a-f for use in the temporal prediction with motion compensation algorithm. However, if the pair of macroblocks (700) is to be encoded in field mode, it is first split into one top field 16 by 16 pixel block (800) and one bottom field 16 by 16 pixel block (801), as shown in FIG. 8. The two fields are then coded separately. In FIG. 8, each macroblock in the pair of macroblocks (700) has N=16 columns of pixels and M=16 rows of pixels. Thus, the dimensions of the pair of macroblocks (700) is 16 by 32 pixels. As shown in FIG. 8, every other row of pixels is shaded. The shaded areas represent the rows of pixels in the top field of the macroblocks and the unshaded

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	areas represent the rows of pixels in the bottom field of the macroblocks. The top field block (800) and the bottom field block (801) can now be divided into one of the possible block sizes of FIGS. 3a-f. According to an embodiment of the present invention, in the AFF coding of pairs of macroblocks (700), there are two possible scanning paths. A scanning path determines the order in which the pairs of macroblocks of a picture are encoded. FIG. 9 shows the two possible scanning paths in AFF coding of pairs of macroblocks (700). One of the scanning paths is a horizontal scanning path (900). In the horizontal scanning path (900), the macroblock pairs (700) of a picture (200) are coded from left to right and from top to bottom, as shown in FIG. 9. The other scanning path is a vertical scanning path (901). In the vertical scanning path (901), the macroblock pairs (700) of a picture (200) are coded from top to bottom and from left to right, as shown in FIG. 9. For frame mode coding, the top macroblock of a macroblock pair (700) is coded first, followed by the bottom macroblock. For field mode coding, the top field macroblock of a macroblock pair is coded first followed by the bottom field macroblock. Another embodiment of the present invention extends the concept of AFF coding on a pair of macroblocks to AFF coding on a group of four or more neighboring macroblocks (902), as shown in FIG.

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	10. AFF coding on a group of macroblocks will be occasionally referred to as group based AFF coding. The same scanning paths, horizontal (900) and vertical (901), as are used in the scanning of macroblock pairs are used in the scanning of groups of neighboring macroblocks (902). Although the example shown in FIG. 10 shows a group of four macroblocks, the group can be more than four macroblocks. If the group of macroblocks (902) is to be encoded in frame mode, the group coded as four frame-based macroblocks. In each macroblock, the two fields in each of the macroblocks are encoded jointly. Once encoded as frames, the macroblocks can be further divided into the smaller blocks of FIGS. 3a-f for use in the temporal prediction with motion compensation algorithm. However, if a group of four macroblocks (902), for example, is to be encoded in field mode, it is first split into one top field 32 by 16 pixel block and one bottom field 32 by 16 pixel block. The two fields are then coded separately. The top field block and the bottom field block can now be divided into macroblocks. Each macroblock is further divided into one of the possible block sizes of FIGS. 3a-f. Because this process is similar to that of FIG. 8, a separate figure is not provided to illustrate this embodiment. In AFF coding at the macroblock level, a frame/field flag bit is preferably included in a picture's bitstream to indicate which

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	mode, frame mode or field mode, is used in the encoding of each macroblock. The bitstream includes information pertinent to each macroblock within a stream, as shown in FIG. 11. For example, the bitstream can include a picture header (110), run information (111), and macroblock type (113) information. The frame/field flag (112) is preferably included before each macroblock in the bitstream if AFF is performed on each individual macroblock. If the AFF is performed on pairs of macroblocks, the frame/field flag (112) is preferably included before each pair of macroblock in the bitstream. Finally, if the AFF is performed on a group of macroblocks, the frame/field flag (112) is preferably included before each group of macroblocks in the bitstream. One embodiment is that the frame/field flag (112) bit is a 0 if frame mode is to be used and a 1 if field coding is to be used. Another embodiment is that the frame/field flag (112) bit is a 1 if frame mode is to be used and a 0 if field coding is to be used.") '374 Patent File History, Examiner's Amendment, June 23, 2007, at 2-4 (e.g., "decoding at least one of said plurality of smaller portions at a time in frame coding mode and at least one of said plurality of smaller portions at a time in field coding mode, wherein each of said smaller portions has a size that is larger than one macroblock, wherein at least one block within said at least one of said plurality of smaller portions at a time is encoded in inter coding mode …."). '374 Patent File History, Reasons for Allowance, June 23, 2007, at

9. means for decoding at least one of a plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode Found in claim number: '374 Patent: 14	
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	5-6 ("Claims … are allowed as having incorporated novel features comprising … decoding at least one of said plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode, wherein each of said smaller potions has a size that is larger than one macroblock, where at least one block within at least one of said plurality of smaller portions at a time is encoded in inter coding mode …. The prior art of record fails to anticipate or make obvious the novel features (emphasis added on *underlined claims(s) limitations*) as specified above."). '375 File History, Reasons for Allowance, July 17, 2007, at 4-5. '376 File History, Reasons for Allowance, May 24, 2007, at 2-9. '374 Patent family file history, United States Patent No. 5,504,530 (to Okibane et al.) United States Patent No. 5,504,530 (to Okibane et al.) ('530 patent), Figs. 2(A), 2(B), 3(A), 3(B).

9. means for decoding at least one of a plurality of smaller portions at a time of the encoded picture that is encoded in frame coding mode and at least one of said plurality of smaller portions at a time of the encoded picture in field coding mode Found in claim number: '374 Patent: 14	
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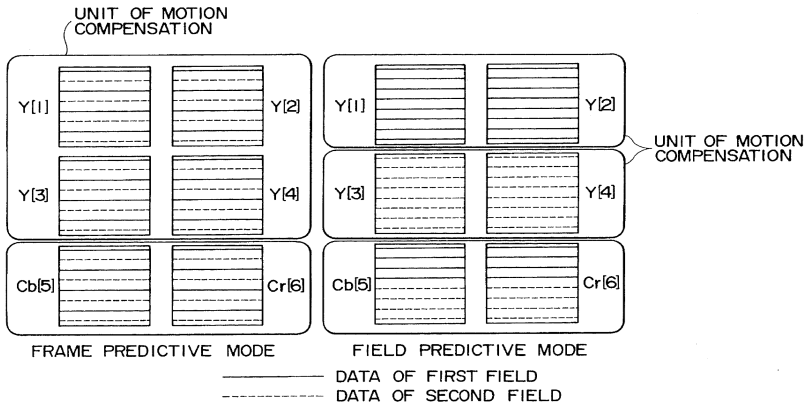
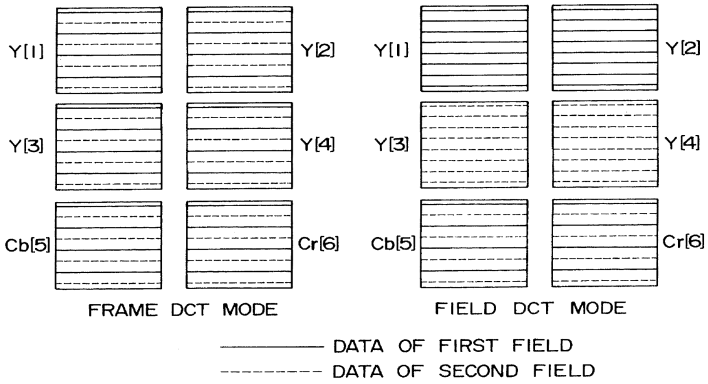
	FIG. 2(A) FIG. 2(B)  FIG. 3(A) FIG. 3(B)  '530 patent, at 6:2-9 ("FIGS. 2(A) and 2(B) are diagrammatic

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	illustrations of the operation of a predictive mode change-over circuit that is part of the image signal coding apparatus of FIGS. 1(A)-1(C);") '530 patent, at 7:55-67 ("Image data representing a picture stored in the frame memory 51 is read out for processing in a frame predictive mode or a field predictive mode by a predictive mode change-over circuit 52. Further, under the control of a predictive mode determination circuit 54, calculations with respect to intra-picture prediction, forward prediction, backward prediction or bi-directional prediction are performed by a calculation section 53. The determination of which type of processing should be performed is based on a prediction error signal formed as a difference between a reference original picture for the frame being processed and a predictive picture. Accordingly, the motion vector detection circuit 50 generates predictive error signals in the form of sums of absolute values or sums of squares for the purpose of the determination. Operation of predictive mode change-over circuit 52 in a frame predictive mode and a field predictive mode will now be described. When operation is to be in the frame predictive mode, the predictive mode change-over circuit outputs four brightness blocks Y[1] to Y[4] as the same are received from the motion vector detection circuit 50. The blocks output from predictive mode

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	change-over circuit 52 are provided to the calculation section 53. In particular, data representing lines of both odd-numbered and even-numbered fields are presented mixed together in each block of brightness data as shown in FIG. 2(A). In the frame predictive mode, prediction is performed on the basis of four blocks of brightness data (i.e. an entire macro block) with one motion vector being provided for the four blocks of brightness data. On the other hand, in the field predictive mode, the predictive mode change-over circuit performs processing upon an input signal which is provided thereto from the motion vector detection circuit 50 so that the signal is arranged in the form shown in FIG. 2(B). Thus, the brightness data blocks Y[1] and Y[2] represent picture elements from the lines for an odd-numbered field, while the other two brightness data blocks Y[3] and Y[4] represent data for lines from even-numbered fields. The resulting data is output from predictive mode change-over circuit 52 to the calculation section 53. In this case, a motion vector for odd-numbered fields corresponds to the two blocks of brightness data Y[1] and Y[2], while a separate motion vector for even-numbered fields corresponds to the other two blocks of brightness data Y[3] and Y[4]. The motion vector detection circuit 50 outputs to the predictive mode change-over circuit 52 respective sums of absolute values of predictive errors for the frame predictive mode and the field predictive mode. The predictive mode change-over circuit 52

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	compares the two sums of predictive errors, performs processing on the absolute value sum corresponding to the predictive mode in which the absolute value sum has a lower value, and outputs the resulting data to the calculation section 53. However, according to a preferred embodiment of the invention, the processing described above is entirely performed within the motion vector detection circuit 50, which outputs a signal in the form corresponding to the appropriate predictive mode to the predictive mode change-over circuit 52, which simply passes that signal on without change to the calculation section 53. Concerning the color difference signal, it should be understood that in the frame predictive mode that signal is supplied to the calculation section 53 in the form of data for mixed lines of odd-numbered fields and even-numbered fields as shown in FIG. 2(A). On the other hand, in the field predictive mode, the first four lines of the color difference blocks Cb[5] and Cr[6] are color difference signals for odd-numbered fields corresponding to the blocks of brightness data Y[1] and Y[2], while the last four lines are color difference signals for even-numbered fields, corresponding to the blocks of brightness data Y[3] and Y[4] as shown in FIG. 2(B). The motion vector detection circuit 50 also produces a sum of absolute values of predictive errors from which it is determined whether the predictive mode determination circuit 54 performs intra-picture processing, forward prediction, backward prediction or bi-directional prediction.")

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	'530 patent, at 9:62-67 ("The DCT mode change-over circuit 55 arranges data contained in the four blocks of brightness data so that, for a frame DCT mode, lines of odd-numbered and even-numbered fields are mixed, or, in a field DCT mode, so that the lines for odd-numbered fields and even-numbered fields are separated, as respectively shown in FIGS. 3(A) and 3(B). The DCT mode change-over circuit 55 outputs the resulting data to a DCT circuit 56. More specifically, the DCT mode change-over circuit 55 performs a comparison of the coding efficiency that would be provided depending on whether the data for odd-numbered fields and even-numbered fields are presented mixed together or separately, and based on the comparison selects the mode which will result in higher coding efficiency.") Extrinsic Evidence: Webster's New World Dictionary, (2nd College Ed.) at 1291 [MS-MOTO_1823_00005194926] ("**select** … adj. [L. selectus, pp. of seligere, to choose, pick out < se, apart + legere, to choose: see logic] … to choose or pick out from among others, as for excellence, desirability, etc. –vi. to make a selection; choose – SYN, see choose"). The American Heritage Dictionary of Idioms (1997) [MS-MOTO_1823_00005194906], at 25 ("**at a time** – see at one time,

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	def. 1."), 30 (**at one time 1.** Simultaneously, at the same time, as in *All the boys jumped into the pool at one time*. For synonyms, see at once, def. 1; at the same time, def. 1."), 29 ("**at once 1.** At the same time, as in *We can't all fit into the boat at once*. [First half of 1200s] Also see at one time, def. 1."), 33 ("**at the same time 1.** Simultaneously, as in *We were all scheduled to leave at the same time*. This idiom was first recorded in 1526. For synonyms, see at once, def. 1; at one time, def. 1."). The American Heritage Dictionary (2nd College Ed.), at 1271 [MS-MOTO_1823_00005194898] ("**at one time. 1**. Simultaneously.").

10. wherein at least one motion vector is received for said at least one block within at least one of said plurality of smaller portions Found in claim number: '374 Patent: 9, 15	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
Proposed Construction: *No construction necessary*. *If construed*: wherein at least one value is received for said at least one block within at least one of said plurality of smaller portions, from which an amount of motion may be determined Intrinsic Evidence: Exhibit A at col 6:25-31 ("For each image (402) in picture N (400), the temporal prediction can often be described by motion vectors that represent the amount of temporal motion required for the image (403) to move to a new temporal position in the picture N (402). The motion vectors (406) used for the temporal prediction with motion compensation need to be encoded and transmitted."); Exhibit A at col 9:38-45 ("Each block in a frame or field based macroblock can have its own motion vectors. The motion vectors are spatially predictive coded. According to an embodiment of the present invention, in inter coding, prediction motion vectors (PMV) are also calculated for each block. The algebraic difference between a block's PMVs and its associated motion vectors is then calculated and encoded. This generates the compressed bits for motion vectors."); Exhibit A at col 13:20-24 ("Another embodiment of the present invention is direct mode macroblock coding for B pictures. In direct mode coding, a B picture has two motion vectors, forward and backward motion vectors. Each motion vector points to a reference picture."); Exhibit A at col 4:38-39 (incorporating by reference Exhibit N at MS-	Proposed Construction: receiving as part of the bitstream at least one value containing the amount of temporal motion required for the image to move to a new temporal position in the picture for each "said at least one block within at least one of said plurality of smaller portions" Intrinsic Evidence: 374 Patent at 6:25-31 ("For each image (402) in picture N (400), the temporal prediction can often be described by motion vectors that represent the amount of temporal motion required for the image (403) to move to a new temporal position in the picture N (402). The motion vectors (406) used for the temporal prediction with motion compensation need to be encoded and transmitted.") '374 Patent, at 9:38-45 ("Each block in a frame or field based macroblock can have its own motion vectors. The motion vectors are spatially predictive coded. According to an embodiment of the present invention, in inter coding, prediction motion vectors (PMV) are also calculated for each block. The algebraic difference between a block's PMVs and its associated motion vectors is then calculated and encoded. This generates the compressed bits for motion vectors.")

10. wherein at least one motion vector is received for said at least one block within at least one of said plurality of smaller portions Found in claim number: '374 Patent: 9, 15	
Motorola's Proposed Construction and Evidence in Support	**Microsoft's Proposed Construction and Evidence in Support**
MOTO_1823_00001461773) ("3.53 motion vector: A two-dimensional vector used for motion compensation that provides an offset from the coordinate position in the decoded picture to the coordinates in a reference picture.").	